PROACTIVE STRATEGIC RESPONSES TO SUSTAINABILITY DETERMINANTS: THE USE OF MANAGEMENT CONTROL SYSTEMS

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LIST OF ACRONYMS

AMO	Apparel Manufacturing Organisation
AVE	Average Variance Extracted
CEO	Chief Executive Officer
CFA	Confirmatory Factor Analysis
CFO	Chief Financial Officer
CR	Composite Reliability
CSR	Corporate Social Responsibility
EFA	Exploratory Factor Analysis
EMA	Environmental Management Accounting
EMS	Environmental Management Systems
GM	General Manager
GMM	Generalised Method of Moments
GRI	Global Reporting Indicator
ISO	International Organization for Standardization
KPIs	Key Performance Indicators
MCS	Management Control Systems
MD	Managing Director
NGOs	Non-governmental Organisations
NRBV	Natural-resource-based View
PLS	Partial Least Squares
PMS	Performance Measurement Systems
RBV	Resource-based View
SD	Standard Deviation
SEM	Structural Equation Modeling
UNGC	United Nations Global Compact
VAF	Variance Accounted For
VIF	Variance Inflation Factors

ABSTRACT

This thesis examines the use of sustainability control systems in proactive strategic responses to institutional and resource-based view sustainability determinants. Despite the increasing importance of proactive strategic responses to sustainability determinants as a way of effectively addressing sustainability challenges and gaining competitive advantage, the literature is relatively silent about whether, how, and to what extent organisations' use of sustainability control systems support proactive strategic responses to institutional and resource-based sustainability determinants. More specifically, this thesis seeks to examine the use of sustainability control systems in proactive strategic responses to sustainability determinants in terms of (i) strategic responses to institutional pressures for sustainability, (ii) translating proactive sustainability strategies into corporate sustainability performance, and (iii) implementing sustainability dynamic capabilities as a means of achieving sustainable competitive advantage. This thesis follows the 'thesis by publication' format, which consists of three interconnected empirical research papers: a case study-based paper, and two survey-based papers.

The case study (Paper one) explores the use of sustainability control systems in strategically responding to institutional pressures for sustainability. Drawing on institutional theory (DiMaggio and Powell, 1983) and strategic responses to institutional pressures typology (Oliver, 1991), the study argues that organisations strategically respond to institutional pressures for sustainability using sustainability control systems. Data were collected by interviewing sustainability managers of a large-scale multinational apparel manufacturing organisation with its headquarters in Sri Lanka. The study finds that organisations actively respond to institutional pressures for sustainability using acquiescence, compromise, avoidance, defiance, and manipulation strategies. The results not only reveal that sustainability control systems (i.e. sustainability budgeting, sustainability key performance indicators, sustainability life-cycle assessment) play an important role in complying with institutional pressures for sustainability, but also in more proactive strategic responses, including compromise, avoidance, defiance, and manipulation.

The two survey-based studies examine the use of sustainability control systems in proactive strategic responses to resource-based sustainability determinants. Theoretically, these two studies are based on the natural-resource-based view of the firm (Hart, 1995), dynamic capabilities (Teece et al., 1997), and levers of control framework (Simons, 1995). Data were

collected from top managers in 175 multinational and local organisations operating in Sri Lanka, and analysed using Partial Least Squares Structural Equation Modeling.

The first survey-based study (Paper two) examines the mediating effect of sustainability control systems on the relationship between proactive sustainability strategies and corporate sustainability performance. The study finds that sustainability control systems only partially mediate the relationship between proactive sustainability strategies and corporate sustainability performance. The mediating effect of sustainability control systems is examined under three sustainability strategies, where environmental and social strategies reveal a partial mediation, and an economic strategy shows no mediation. The second survey-based study (Paper three) examines the extent to which enabling and controlling uses of sustainability control systems moderate the relationship between sustainability innovation capabilities and sustainable competitive advantage. The study finds that while the enabling use of sustainability control systems positively moderates the relationship between sustainability innovation capabilities and sustainable competitive advantage, in contrast, controlling use of sustainability control systems negatively moderates. The study also compares the results between manufacturing and services industries. Contrary to the study's expectation, the findings in the services sector do not show a significant moderating impact in both perspectives. The two survey-based studies provide novel empirical and theoretical insights into the management accounting and strategic management literatures using the natural-resource-based view of the firm in implementing proactive sustainability strategies and sustainability innovation capabilities with the support of sustainability control systems. As a whole, both the exploratory and confirmatory studies undertaken in this thesis provide empirical and theoretical evidence that the use of sustainability control systems has an important role in supporting proactive strategic responses to sustainability determinants and, in turn, impacts long term corporate sustainability performance.

Keywords: Management control systems; Sustainability control systems; Proactive strategic responses; Sustainability determinants; Corporate sustainability performance; Dynamic capabilities; Institutional pressures for sustainability; Natural-resource-based view

DECLARATION

I, Chaminda Wijethilake, hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma or the university or other institute of higher learning, except where due acknowledgement is made in the text, and meets the requirements of the National Statement on Ethical Conduct in Human Research (Human Research Ethics approval reference numbers: 5201300659 and 5201400337).

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Chapter 1 : INTRODUCTION

1.1 BACKGROUND

Globalisation, digital disruption and rapidly changing socio-economic conditions are creating substantial changes in today's business environment with a plethora of new products, ever increasing global competition, emergence of contemporary business technologies, and shifting customer preferences (Porter and Kramer, 2006; Epstein and Buhovac, 2014; Sharma, 2014). The sustainability impacts of these changes, such as irreversible depletion of ecology, increasing greenhouse gas emission, declining natural resources, increasing demand for transparent business practices, and the rising tide of social and commercial expectations have compelled organisations to re-assess their strategies as a way of responding to these determinants of sustainability[1] (Sharma and Vredenburg, 1998; Bebbington, 2001; Porter and Kramer, 2006; Aragón-Correa and Rubio-Lopez, 2007; Bebbington and Larrinaga, 2014; Epstein and Buhovac, 2014; Phan and Baird, 2015). Empirical evidence shows that 'how' organisations respond to sustainability determinants influences corporate sustainability performance (e.g. Judge and Douglas, 1998; Sharma and Vredenburg, 1998; Klassen and Whybark, 1999; Torugsa et al., 2013; Bhupendra and Sangle, 2015). Despite the significance of 'how' organisations should respond to sustainability determinants, many prior studies examining sustainability management have focused instead of questions of 'why' or 'what' motivates organisations to become involved in sustainability practices (e.g. Bansal and Roth, 2000; Bansal, 2005; González-Benito and González-Benito, 2006).

Organisations may become involved in sustainability practices for different reasons derived both externally and internally, such as reconstructing eroded legitimacy and gaining a sustained competitive advantage (Bansal, 2005; Gond et al., 2012; Lueg and Radlach, 2015). Appropriately recognising different sustainability determinants, whether they are related to social legitimacy or operational efficiency, and whether they are internal to the organisation or external, may help organisations to choose the most appropriate responses. Failure to do so has the potential to result in negative consequences, such as wasting valuable resources, increasing rather than solving sustainability issues, loss of competitive position, and damage to corporate reputation. The prior literature (e.g. Bansal, 2005; Lueg and Radlach, 2015) suggests that there are primarily two different rationales that explain the factors that determine corporate sustainability responses: (i) institutional determinants; and (ii) resource-based view (RBV)

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[1] The term 'sustainability determinants' refers to both institutional and resource-based view factors that impact corporate sustainability practices (Jones, 1999; Bansal, 2005; González-Benito and González-Benito, 2006).

determinants. Lueg and Radlach (2015, p. 2) indicate that "organizations often engage in SD [sustainable development] to pursue a resource-based strategy and to respond to institutional demands".

The institutional perspective suggests that organisations operate in a social context and are subject to institutional pressures from a wide range of stakeholders. Lueg and Radlach (2015, p. 2) indicate that according to the institutional perspective,

> organizations act in a social context and experience pressure from stakeholders. In order to keep access to resources and to uphold legitimacy, organizations attempt to comply with stakeholders' norms and beliefs. For this, organizations adopt SD [sustainable development] that becomes institutionalized through regulations and agreements.

Conceptually, institutional theory proposes three isomorphic pressures, namely coercive, mimetic and normative pressures that influence organisations when operating in a particular social context (DiMaggio and Powell, 1983). Institutional pressures for sustainability include, for instance, government and regulatory bodies (coercive pressure), competitors (mimetic pressure), and professional bodies (normative pressures) (Bansal, 2005).

The RBV of the firm considers sustainability as a strategic intangible asset that helps to generate unique capabilities and competencies that could eventually lead to sustainable competitive advantage (Bebbington, 2001; Bansal, 2005; Nixon et al., 2011). Lueg and Radlach (2015, p. 2) note that under the RBV, sustainability "is considered as a strategic intangible asset which is adopted to improve performance and to create opportunities from innovations and internal changes". RBV sustainability determinants, for example, include international experience, organisational slack, and capital management capabilities (Bansal, 2005). 'How' organisations should respond to both institutional and RBV sustainability determinants has become an important issue amongst various internal and external stakeholders.

Typically, organisational responses towards sustainability determinants are classified in a continuum of two contrasting approaches, ranging from reactive to proactive strategic responses (Hunt and Auster, 1990; Aragón-Correa and Sharma, 2003; González-Benito and González-Benito, 2006; Perego and Hartmann, 2009). Reactive organisations merely comply with compulsory and minimum requirements of sustainability regulations and stakeholder demands through defensive lobbying and by taking action at the end of the process (Hunt and Auster, 1990; Winsemius and Guntram, 1992; Aragón-Correa and Sharma, 2003). Perego and Hartmann (2009, p. 400) outline that "in reactive organisations, environmental objectives have not (yet) been developed explicitly, or have not been integrated in the overall business strategy".

Organisations following reactive responses to sustainability determinants would expect to meet the minimum requirements to operate a business, but are less likely to gain improved performance.

By contrast, organisations that follow proactive strategic responses to sustainability determinants engage in "systematic patterns of voluntary practices that go beyond regulatory requirements" (Aragón-Correa and Rubio-Lopez, 2007, p. 358). Examples of proactive strategic responses to sustainability determinants include reduction of waste and prevention of pollution at source. More specifically, proactive strategic responses "involve(s) business practices adopted voluntarily by firms that go beyond regulatory requirements in order to actively support sustainable economic, social and environmental development, and thereby contribute broadly and positively to society" (Torugsa et al., 2013, p. 383). Lueg and Radlach (2015, p. 1), stress that "SD [sustainable development] remains only a good intention, unless organisations make serious efforts to enforce it" in their systems. A review of the literature suggests that organisations following proactive strategic responses are more likely to gain improved corporate sustainability performance in terms of enhancing social reputation, fulfilling customer preferences, and generating unique organisational capabilities (Hart, 1995; Russo and Fouts, 1997; Judge and Douglas, 1998; Sharma and Vredenburg, 1998; Klassen and Whybark, 1999; Christmann, 2000; Banerjee, 2001; Aragón-Correa and Sharma, 2003; Aragón-Correa and Rubio-Lopez, 2007; Fowler and Hope, 2007; Clarkson et al., 2011; Torugsa et al., 2013; Bhupendra and Sangle, 2015). Nevertheless, the extant literature provides less evidence on (i) whether and how organisations use proactive strategic responses to institutional and RBV sustainability determinants, (ii) what theoretical approaches explain the proactive strategic responses to both institutional and RBV sustainability determinants, and (iii) what internal managerial processes support the proactive strategic responses to institutional and RBV sustainability determinants.

To examine the possible proactive strategic responses to institutional and RBV sustainability determinants, based on the review of prior literature, this thesis identifies two theoretical approaches: (i) strategic responses to an institutional process framework as a proactive strategic responses to institutional sustainability determinants (Oliver, 1991), and (ii) the natural-resource-based view (NRBV) of the firm as a proactive strategic responses to RBV sustainability determinants (Hart, 1995). First, Oliver (1991, p. 145) argues that organisations do not always blindly comply with institutional pressures; however, their active organisational resistance varies from "passive conformity to proactive manipulation". According to Oliver

(1991), organisations may use five strategic responses to institutional pressures: (i) acquiescence; (ii) compromise; (iii) avoidance; (iv) defiance; and (v) manipulation. Perego and Hartmann (2009, p. 399), in this context, highlight that "in response to such [environmental] institutional pressures, companies are increasingly adopting voluntary environmental strategy in order to effectively manage the environmental impacts of their processes, products and services". Second, Hart (1995) proposes the NRBV of the firm arguing that the RBV of the firm has limited capacity to explain how organisations achieve competitive advantage when they interact with the natural environment. Therefore, Hart (1995) argues that organisations may implement proactive sustainability strategies[2] and sustainability dynamic capabilities (e.g. sustainability innovation capabilities) in response to RBV sustainability determinants. More specifically, Hart (1995) proposes three proactive sustainability strategies, namely, pollution prevention, product stewardship, and a sustainable development strategy, that organisations may use in proactive strategic responses to RBV sustainability determinants.

Despite the increasing momentum of proactive strategic responses to institutional and RBV sustainability determinants, the extant literature is relatively silent as to the internal managerial processes that support proactive strategic responses (Aragón-Correa and Rubio-Lopez, 2007; Arjaliès and Mundy, 2013; Epstein and Buhovac, 2014; Lisi, 2015; Ditillo and Lisi, 2016). Researchers have continuously advocated the importance of the role of management control systems (MCS) in enabling organisational responses to sustainability determinants by integrating environmental, social and economic dimensions into the strategic decision making process (Norris and O'Dwyer, 2004; Ball and Milne, 2005; Covaleski et al., 2006; Durden, 2008; Henri and Journeault, 2010; Gond et al., 2012; Pondeville et al., 2013; Rodrigue et al., 2013; Epstein and Buhovac, 2014; Ditillo and Lisi, 2014, 2016; Lisi, 2015). In response to these demands, sustainability control systems,[3] such as eco-control, have emerged as a new form of MCS to support sustainability strategies and decision making (e.g. Henri and Journeault, 2010; Gond et al., 2012; Bebbington and Thomson, 2013; Contrafatto and Burns, 2013; Figge and Hahn, 2013; Lueg and Radlach, 2015; Ditillo and Lisi, 2014, 2016).

Typically, MCS facilitate organisations to specify and communicate their objectives amongst stakeholders, monitor performance by providing feedback and imposing control

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[2] The term is also used interchangeably with "proactive environmental strategies" (Buysse and Verbeke, 2003; Aragon-Correa and Rubio-Lopez, 2007) and "proactive corporate social responsibility strategy" (Arjaliès and Mundy, 2013; Torugsa et al., 2013).

[3] Similar terms used in the literature include "sustainability control systems" (Gond et al., 2012), "sustainability management control" (Schaltegger, 2011), and "sustainability management control systems" (Lueg and Radlach, 2015).

mechanisms, and motivate employees to achieve corporate goals by appraising and rewarding their accomplishments (Otley and Berry, 1980; Emmanuel et al., 1985). Sustainability control systems are regarded as specific applications of MCS and a part of environmental management accounting (EMA) (e.g. Henri and Journeault, 2010). Sustainability control systems support organisations to achieve corporate sustainability goals by disseminating sustainability core values amongst stakeholders, setting boundaries to avoid sustainability risks, measuring and evaluating sustainability performance, and minimising sustainability uncertainties (Henri and Journeault, 2010; Schaltegger and Burritt, 2010; Gond et al., 2012; Arjaliès and Mundy, 2013; Lisi, 2015). Prior studies have referred to different MCS frameworks to understand the use of sustainability control systems, such as the Balanced Scorecard (Schaltegger, 2011), Simons' levers of control framework (e.g. Gond et al., 2012), and Malmi and Brown's (2008) MCS package framework (Lueg and Radlach, 2015). Despite a growing body of research in the environmental dimension of sustainability management (Henri and Journeault, 2010; Lisi, 2015), there is a paucity of evidence on whether, how, and to what extent organisations use sustainability control systems in proactive strategic responses to sustainability determinants. In a recent study, Ditillo and Lisi (2016, p. 1) highlight that "we know very little about management control for sustainability". The research underpinning this thesis aims to contribute to this debate by investigating the *use* of sustainability control systems in proactive strategic responses to both institutional and RBV sustainability determinants. More specifically, the following three research objectives are proposed to achieve this aim.

1. To examine the use of sustainability control systems in strategically responding to institutional pressures for sustainability.

2. To examine the use of sustainability control systems in translating proactive sustainability strategies into corporate sustainability performance.

3. To examine the use of sustainability control systems in implementing sustainability dynamic capabilities.

The remainder of this chapter is structured as follows. Section two discusses the motivation for the thesis. Section three presents the structure of the thesis in terms of the three empirical studies undertaken to achieve the above research objectives. The section briefly summarises the aims, methods, results, and contributions of each empirical study. The final section provides an outline of the remainder of the thesis.

1.2 MOTIVATION OF THE THESIS

The following four factors motivated this thesis:

1. to contribute to the role of management accounting in the societal relevance of decision making;

2. to contribute to the limited literature investigating the use of sustainability control systems in proactive strategic responses to sustainability determinants and sustainability performance implications;

3. to contribute to the limited theoretical applications on the use of sustainability control systems in proactive strategic responses to sustainability determinants;

4. to contribute to the literature investigating the use of sustainability control systems in the developing country context.

The sections below discuss each of these motivations.

To contribute to the role of management accounting in the societal relevance of decision making

Taking a broader perspective, Balakrishnan (2012, p. 274) identifies management accounting research as "any work that advances our understanding of how organisations collect, manage, and use information". During the last couple of decades the societal relevance and practical usefulness of management accounting research has been extensively debated in the scholarly literature and in practice (Otley, 1994; Scapens, 2006; Merchant and Otley, 2007; Chapman and Kern, 2012; Merchant, 2012; Scapens, 2012; Modell, 2014; Tucker and Schaltegger, 2016). Merchant and Otley (2007) argue that organisations should choose and use MCS strategically by understanding the environment within which it operates so as to better serve wider stakeholder needs. Merchant (2012) emphasises that the role and scope of management accounting have developed over time to become more focused on emerging stakeholders' needs. Scapens (2006) discusses that management accounting researchers need to develop a greater focus on practical relevance of theories to understand the complex interrelated impacts that influence the practices within individual organisations. However, Modell (2014, p. 83) proposes a slightly different view advocating a need "to turn management accounting research 'inside out' to examine the effects of management accounting practices on a broader range of

constituencies and interests in society and the formation of such practices beyond individual organisations". Regardless of whether the focus is within individual organisations or beyond the organisations, there is an emerging need to pay attention to the practical and societal relevance of management accounting research.

While the traditional role of management accounting is to meet the information needs of internal financial decision making, such as short-term cost and revenue, long-term investment appraisals, and internal accountability, researchers contend that it should also be able to support decision making in order to respond to emerging sustainability challenges (e.g. Schaltegger and Burritt, 2000; Burritt et al., 2002; Norris and O'Dwyer, 2004; Durden, 2008; Burritt and Schaltegger, 2010; Gond et al., 2012; Merchant, 2012; Modell, 2014). Durden (2008) illustrates that MCS should support practitioners in achieving not only shareholders' but all stakeholders' goals, including social responsibility. This is important because organisational success is not merely based on technical and operational efficiency; gaining social legitimacy is also essential (Abernethy and Chua, 1996). Merchant (2012) argues that sustainability is one of the most prominent concerns with which practitioners struggled, and, in turn, management accounting researchers are expected to contribute to resolving these struggles. However, "unfortunately, conventional management control approaches neglect sustainability issues as long as they are not directly expressed in monetary terms" (Schaltegger, 2011, p. 341). The emphasis on the role of MCS in sustainability contributes to concept that there is a broader societal role for MCS (Otley, 1994), and examines the impact of institutional and contingency factors (Ouchi, 1979; Chenhall, 2003, Otley, 2016).

While the role of financial accounting in sustainability has been examined to a great extent (Larrinaga-Gonzalez and Bebbington, 2001; Gray and Collison, 2002; Adams and McNicholas, 2007; Gray, 2010; Thoradeniya et al., 2015), less is known about management accounting applications (e.g. Berry et al., 2009; Hopwood, 2009; CIMA, 2010; Schaltegger, 2011; Gond et al., 2012; Nixon and Burns, 2012; Henri et al., 2014, 2015; Lueg and Radlach, 2015; Ditillo and Lisi, 2016). Perego and Hartmann (2009, p. 399) outline that "academic evidence on environmental management accounting spares, especially when compared with financial accounting research on antecedents and effects of external environmental reporting". Schaltegger (2011, p. 342) emphasises that "a more encompassing management control approach towards sustainability management is thus missing, so far". Interestingly, not only academics (Ball and Milne, 2005; Berry et al., 2009; Gond et al., 2012), but leading professional accounting bodies (e.g. CIMA, 2010; ACCA, 2013) have also been claiming the significance

of the role of MCS in supporting sustainability decision making. For instance, CIMA (2010, p. 2) emphasises that "failure for management accountants to get involved now, when key decisions are being taken in areas like carbon trading and compliance with new climate change related regulations, could result in far higher costs, lost opportunities or reduced competitiveness". Hence, the first motivation for this thesis is to understand, and to contribute to the use of management accounting applications in the societal relevance of decision making, with a particular emphasis on sustainability management.

To contribute to the limited literature investigating the use of sustainability control systems in proactive strategic responses to sustainability determinants and sustainability performance implications

Top management's lack of understanding and attention about the internal managerial processes to support proactive strategic responses to sustainability determinants have been a major impediment to achieving sustainability goals (Nidumolu et al., 2009). Empirical evidence shows that top management's motivation to invest in sustainability projects without knowing how to execute them is more likely to generate negative consequences, such as managerial decisions to invest in projects that have no clear returns (Aragón-Correa and Rubio-Lopez, 2007; Nidumolu et al., 2009). Nidumolu et al. (2009, p. 62) highlight that "top management's interest in sustainability sometimes leads to investments in projects without an understanding of how to execute them". Ad hoc responses, and responses without an appropriate strategic analysis of causes and consequences of sustainability determinants, may even increase sustainability issues instead of mitigating them.

CIMA (2010, p. 2) suggests that "management accountants have a key role to play in driving sustainable strategic and operational decisions. But CIMA's research shows that even where finance teams are engaged in climate change related activities, it has often been on an ad hoc basis". Researchers also claim that top management's sustainability decisions often disregard both internal (analysis, selection/implementation, and control) and external (uncertainty, complexity, and munificence) contextual factors that may moderate or mediate the proactive strategic responses and corporate sustainability performance (Aragón-Correa and Sharma, 2003; Aragón-Correa and Rubio-Lopez, 2007). Bromley and Powell (2012, p. 519), therefore, suggest that "there is a need for more reflective and proactive responses to external pressures … how organisations can mediate environmental pressures and how they can shape their environment would be useful". Thus, there is an emergent need for top management to

understand how to use internal management processes, such as sustainability control systems in proactive strategic responses to sustainability determinants in effectively addressing sustainability challenges and, in turn, achieving corporate sustainability performance.

A growing body of literature outlines the organisational motivations and commitment in proactive strategic responses to sustainability determinants as a means of achieving sustainable competitive advantage (Sharma and Vredenburg, 1998; Aragón-Correa and Sharma, 2003; Bansal, 2005; Aragón-Correa and Rubio-Lopez, 2007; Hart and Dowell, 2010). According to Nidumolu et al.'s prediction (2009, p. 58), "in the future, only companies that make sustainability a goal will achieve competitive advantage. That means thinking business models as well as products, technologies, and process". The United Nations Global Compact-Accenture CEO Study, in this context, finds that "96% of CEOs believe that sustainability issues should be fully integrated into the strategy and operations of a company" in order to achieve corporate sustainability goals (Lacy et al., 2010, p. 14). Despite the fact that sustainability strategies are the key drivers of potential sustainable competitive advantage, the literature provides little empirical evidence on the relationship between proactive sustainability strategies, sustainability dynamic capabilities, and sustainable competitive advantage (e.g. Russo, 2009; Chatha et al., 2015; Hofmann et al., 2012; Kerr et al., 2006; Longoni and Cagliano, 2015). For instance, Longoni and Cagliano (2015, p. 23) propose that future research "may concern the study of possible sequences through which companies build cumulative capabilities to achieve competitive advantage ... by adding environmental and social sustainability capabilities".

While the role of MCS in the formulation and implementation of organisational strategy is relatively established (e.g. Lord, 1996; Kober et al., 2003, 2007; Bisbe and Otley, 2004; Henri, 2006; Tucker and Parker, 2015), the current literature provides limited evidence on the use of MCS in facilitating sustainability strategies and dynamic capabilities (e.g. Gond et al., 2012; Arjaliès and Mundy, 2013; Crutzen and Herzig, 2013 Rieckhof et al., 2015; Kerr et al., 2015). Arjaliès and Mundy (2013, p. 298) suggest that "future research could consider the relation between a firm's motivation for engaging in CSR [corporate social responsibility] strategy and its use of controls to implement that strategy". Yet, it is not clear whether, how, and what internal control mechanisms should be used (i) in proactive strategic responses to institutional pressures for sustainability and (ii) to implement proactive sustainability strategies and sustainability dynamic capabilities (Gond et al., 2012; Arjaliès and Mundy, 2013; Crutzen and Herzig, 2013). In responding to this emerging need, the research underpinning this thesis seeks to examine the use of sustainability control systems in proactive strategic responses to

sustainability determinants by referring to both exploratory and confirmatory analytical approaches.

Typically, there are two approaches to MCS research: (i) examining the effect of contingent factors on MCS; and (ii) examining the effectiveness of MCS. The first stream of research, which is based on contingency theory, proposes that organisations achieve improved performance by aligning the fit between contextual contingencies and MCS applications (Ouchi, 1979; Govindarajan and Gupta, 1985; Langfield-Smith, 1997; Chenhall, 2003; Otley, 2016). The use of MCS with sustainability practices underpins the determination of organisational practices in line with institutional and contingency theories. A review of the literature reveals that the existing MCS studies have largely contributed to the *design* characteristics of MCS in responding to institutional pressures for sustainability and changes in organisational strategies (Epstein and Wisner, 2005; Durden, 2008; Perego and Hartmann, 2009; Pondeville et al., 2013; Rodrigue et al., 2013), and scant attention has been given to examine how, whether, and to what extent organisations *use* sustainability control systems in proactive strategic responses to institutional pressures for sustainability and to facilitate the implementation of sustainability strategies and dynamic capabilities (Adams and Frost, 2008; Riccaboni and Leone, 2010; Gond et al., 2012; Arjaliès and Mundy, 2013; Crutzen and Herzig, 2013). The research underpinning this thesis, therefore, aims to contribute to the debate on the *use* of sustainability control systems in proactive strategic responses to both institutional and RBV sustainability determinants.

Further, the extant literature examining the role of MCS in institutional pressures for sustainability has extensively focused on the environmental aspects of sustainability and performance measurement systems (Pondeville et al., 2013; Rodrigue et al., 2013). Therefore, this thesis aims to examine the use of MCS in strategic responses to institutional pressures for sustainability from a holistic approach, including (i) specifying and communicating sustainability objectives, (ii) monitoring sustainability performance, and (iii) linking sustainability rewards to performance systems (cf. Otley and Berry, 1980; Lindsay et al., 1996; Norris and O'Dwyer, 2004). This thesis extends prior literature by integrating all three aspects of sustainability (environmental, social and economic) and, in turn, examines the strategic implications of MCS.

Moreover, the current studies examining the use of sustainability control systems in proactive sustainability strategies and sustainability dynamic capabilities have not focused

much attention on providing explicit evidence on the impact of sustainability control systems on corporate sustainability performance or sustainable competitive advantage (Gond et al., 2012; Arjaliès and Mundy, 2013; Crutzen and Herzig, 2013; Journeault, 2016). This thesis aims to examine the sustainability performance impact of sustainability control systems through mediating and moderating roles on the relationship between proactive sustainability strategies, sustainability dynamic capabilities, and corporate sustainability performance. More specifically, this thesis investigates the use of sustainability control systems in implementing proactive sustainability strategies by referring to Simons' (1995) levers of control framework. The levers of control framework, which consists of belief, boundary, diagnostic, and interactive control systems, has gained much attention amongst MCS researchers examining the formulation and implementation of strategy and dynamic capabilities (Simons, 1995). While prior studies examining the levers of control framework in sustainability strategy have contributed to interactive and/or diagnostic uses of levers of control, conceptually or using case study methods (e.g. Gond et al., 2012; Arjaliès and Mundy, 2013; Rodrigue et al., 2013; Kerr et al., 2015), this thesis examines the use of four levers of control together, considering both the enabling and controlling uses of levers of control separately. The second motivation for the thesis, therefore, is to examine the use of sustainability control systems from a holistic approach in proactive strategic responses to institutional pressures for sustainability and in the implementation of proactive sustainability strategies and sustainability dynamic capabilities as a means of achieving sustainable competitive advantage.

To contribute to the limited theoretical applications on the use of sustainability control systems in proactive strategic responses to sustainability determinants

Despite the organisational dilemma of whether to focus on internal or external factors in determining sustainability responses, most prior studies (with the exception of studies such as Bansal, 2005) have contributed to either the institutional perspective (Jennings and Zandbergen, 1995; Hoffman and Ventresca, 1999, 2002; Delmas and Toffel, 2004; Phan and Baird, 2015) or the RBV perspective (Hart, 1995; Klassen and Whybark, 1999; Russo and Fouts, 1997). However, Oliver (1997, p. 697) argues that "both resource capital and institutional capital are indispensable to sustainable competitive advantage". While researchers examining a single perspective of sustainable competitive advantage through sustainability strategy reveal an in-depth understanding of the phenomenon, such an approach is less likely to provide a comprehensive picture of the organisational behaviour and responses to both institutional and RBV sustainability determinants.

This thesis examines the role of both institutional and RBV perspectives by extending their use in proactive strategic responses to sustainability determinants. From the institutional perspective, this study uses the institutional theory (DiMaggio and Powell, 1981) and strategic responses to institutional pressures framework (Oliver, 1991). While institutional theory has been widely used in prior MCS studies, the literature does not provide sufficient evidence on the use of Oliver's (1991) strategic responses to institutional pressures framework in general, and institutional pressures for sustainability more specifically. Lounsbury (2008) stresses that accounting systems have an important role in understanding organisational practical variances in responding to institutional pressures. Yet Lounsbury (2008, p. 356) highlights that current studies have "… tended to ignore broader institutional dynamics in favour of more micro-processual studies of how accounting systems shape and are shaped by intra-organisational dynamics".

From the RBV perspective, this thesis refers to the NRBV of the firm (Hart, 1995) and dynamic capabilities (Teece et al., 1997). Despite the relevance of the NRBV of the firm in explaining proactive strategic responses to RBV determinants, research examining the role of MCS in this strand of literature is limited (e.g. Journeault, 2016). Among few studies, Journeault (2016) recently referred to the NRBV approach to examine the influence of eco-control on environmental and economic performance. Importantly, this approach responds to Ball and Craig's (2010, p. 292) proposition that for a systematic analysis of the role of accounting in sustainability concerns "… we need to incorporate developments in wider social theory which have affinities with institutional analysis of organisational sociology". This study, therefore, attempts to incorporate different theoretical concepts to enhance the understanding of the use of sustainability control systems in proactive strategic responses to sustainability determinants.

Importantly, in a recent study, Lueg and Radlach (2015) claim that at present the role of sustainability control systems in sustainability decision making is fragmented in terms of definitions, theoretical applications and performance consequences. They also conclude that "the link between conceptual and empirical contributions on SMCS [sustainability management control systems] is weak" (Lueg and Radlach, 2015, p. 2). According to Crutzen and Herzig (2013), more than a half of the MCS studies related to sustainability strategies do not explicitly refer to any theoretical or conceptual framework. More specifically, "… traditional theories such as institutional theory, contingency theory or stakeholder theory are rarely used … it is

also somewhat curious omission that the RBV theory … has largely been ignored" (p. 174). While few studies provide some evidence on the relationship between MCS and organisational strategy from the RBV perspective (e.g. Henri, 2006; Widener, 2006; Grafton et al., 2010), the extant literature reveals little evidence on the relationship between sustainability control systems and proactive sustainability strategies and sustainability dynamic capabilities.

Durden (2008, p. 677) argues that "in order for an organisation to operate in a socially responsible manner an integrative approach is required where there is alignment and fit of both external and internal social information needs". By examining how management controls influence managers' social responsive decision making, Norris and O'Dwyer (2004, p. 176) highlight that "in order for corporate social responsiveness to prevail it therefore needs to be supported by a management control system which promotes or institutionalises decision-making in this holistic vein". Reviewing the literature on MCS and strategy, Langfield-Smith (1997) concludes that the relationship between MCS and strategy is conflicting and fragmentary to a certain extent. Similarly, researchers (Henri, 2006; Tucker et al., 2009) also attribute ambiguous and contradictory findings on the relationship between MCS and strategy to the use of inconsistent definitions, conceptualisation and operationalisation issues related to strategy and MCS. Therefore, the third motivation of this thesis is to provide empirical evidence of the use of sustainability control systems in proactive strategic responses to sustainability determinants from both the institutional and RBV perspectives by integrating strategic responses to institutional pressures framework (Oliver, 1991) and the NRBV of the firm (Hart, 1995).

To investigate the use of sustainability control systems in the developing country context

The rise of the developing country context in the global economy, which includes emerging and less developed economies, has gained much attention from both researchers and practitioners from different perspectives, such as international business strategies (London and Hart, 2004; Ramamurti, 2004; Peng et al., 2008), sustainability strategic implications (Prahalad and Hart, 2002; Hart and Dowell, 2011; Epstein and Buhovac, 2014), and management accounting applications (Hopper et al., 2009). Researchers argue that both local and multinational corporations operating in the developing country context have great potential to secure long-term benefits and contribute to alleviating poverty by developing sustainable development strategies (Hart and Christensen, 2002; Prahalad and Hart, 2002; London and Hart, 2004; Prahalad, 2005; Hart and Dowell, 2011). To capture the emerging opportunities in

a rapidly changing environment in the developing country context, researchers also call for new theoretical tools and applications, such as the institutional-based view (Peng et al., 2008) and the NRBV of the firm (Hart, 1995; Hart and Dowell, 2011). Barney et al. (2011, p.1310) outline that:

> BoP [bottom of pyramid][4] remains an intriguing and fertile ground for organisational research – roughly one sixth of the world's population lives on one dollar per day or less, yet little inquiry has examined these individuals' interactions with organisation, and theory development within this realm has been minimal.

Business organisations operating in developing economies are highly influenced by sustainability policies and regulatory pressures derived from international and intergovernmental organisations, such as the World Bank, International Monitory Fund, World Trade Organisation, International Labour Organisation, and the United Nations (e.g. O'Rourke, 2004; Perego and Hartmann, 2009). For instance, the World Bank proposes recommendations to enhance corporate social responsibility reporting as a way of improving transparency and accountability in developing country (O'Rourke, 2004). Peng et al. (2008, p. 921) argue that institutions operating in the developing country context are significantly different from the developed world:

> ... emerging economies whose institutions differ significantly from those in developed economies, there is increasing appreciation that formal and informal institutions, commonly known as the 'rules of the game'...significantly shape the strategy and performance of firms – both domestic and foreign – in emerging economies.

Thus, it is important for both local and multinational organisations operating in the developing country context to understand how to respond to these diverse sustainability institutional determinants as a means of achieving long-term performance. Hart and Dowell (2011, p. 1475) suggest that "as both academic research and corporate experience in the BoP expand, we see a need to understand how legitimacy is conferred on firms that operate in such complex and dynamic environments".

Emphasising how institutions matter in the emerging economy context, Peng et al. (2008, p. 921) propose that "... especially its recent focus on competition in emerging economies, affords us a wonderful opportunity to shed light on the 'how' question and to contribute one leg – an institution-based view". Moreover, as emphasised by Peng et al. (2008), the 'how' question raises the concerns of using appropriate internal managerial processes to support

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[4] The term Bottom of Pyramid commonly referred to developing countries, developing economies or emerging economies.

proactive strategic responses that are shaped by the specific institutional and RBV sustainability determinants. As the developing country is one of the most attractive investment destinations for Western investors, it is important to understand how organisations in this particular context respond to sustainability determinants and, in turn, how accounting systems support such responses. For instance, it is important to understand what key performance indicators are used to measure sustainability performance as such information is required by potential investors, regulatory bodies, and stakeholders generally and is likely to influence their decision making.

Beyond the Western investors' perspective, management accounting practices can also support the resolution of sustainable development issues in the developing country context in the form of governance, planning, employment and quality of life (Hopper et al., 2009). Baxter and Chua (2003, p. 108) support this view that management accounting practices emerge as "highly situated phenomena – limited by historical conditions that are specific to given times and places". Importantly, the World Bank (2016, p. xv) recently warned that institutions in developing country should "encourage investor confidence with reforms to governance, labour market functioning, and business environments". Yet, "there are only relatively few studies of (management) accounting practices in many less developed countries, and each new study brings the opportunity of a fresh perspective on this rich unexploited research environment" (Albu and Albu, 2012, p. 246). Empirical evidence also suggests that, compared to financial accounting, there is relatively little application of management accounting principles in this context (Rahman et al., 2003). Moreover, Crutzen and Herzig (2013) call for studies to examine the use of MCS in the implementation of sustainability strategy in the Asian developing country context. The fourth motivation, therefore, is to investigate the use of sustainability control systems in proactive strategic responses to sustainability determinants in the developing country context.

1.3 THE STRUCTURE OF THE THESIS

The thesis follows the 'thesis by publications' format, which consists of three interconnected empirical research papers presented in academic journal article format. The three papers have been developed to address the three research objectives proposed in the thesis. Below is a summary of each empirical paper presented in Chapters 4, 5 and 6.

Paper 1: Strategic responses to institutional pressures for sustainability: The role of sustainability control systems

This paper investigates the use of sustainability control systems in strategically responding to institutional pressures for sustainability. More particularly, using the case study method, the paper addresses: (i) what forms of institutional pressures (i.e., coercive, mimetic and normative) can influence an organisation to adopt sustainability? (ii) How did the organisation respond to institutional pressures for sustainability? and (iii) What was the role of sustainability control systems in supporting strategic responses to institutional pressures for sustainability? Drawing on institutional theory (DiMaggio and Powell, 1983) and the strategic responses to institutional pressures framework (Oliver, 1991), the study argues that organisations strategically respond to institutional pressures for sustainability using sustainability control systems.

The data for this study were collected by interviewing 15 sustainability managers of a large-scale multinational apparel manufacturing organisation with its headquarters in Sri Lanka. The organisation operates in 15 countries employing more than 74,000 employees, and with revenue exceeding $1.5 billion per annum. The case organisation was influenced by various institutional pressures for sustainability, such as coercive (regulatory, transnational organisations, customers, Board of Directors), mimetic (competitors, multinational organisations, group level best practices, sustainability forums and industry experts), and normative (top management philosophy, organisational policies, professional bodies). The study finds that the case organisation actively responds to institutional pressures for sustainability using acquiescence, compromise, avoidance, defiance, and manipulation strategies. The results not only reveal that sustainability control systems (i.e., sustainability budgeting, sustainability key performance indicators, sustainability life-cycle assessment) play a critical role in complying with institutional pressures for sustainability, but also in more proactive strategic responses, including compromise, avoidance, defiance, and manipulation. The findings conclude that organisations use sustainability control systems as a medium to respond strategically to institutional pressures for sustainability.

The study contributes to the MCS and sustainability management literatures in the following important and distinct ways. First, this study extends the use of sustainability control systems in strategic responses to institutional pressures for sustainability. In doing so, the study provides empirical evidence to support that sustainability control systems have a critical role in supporting proactive strategic responses to institutional pressures for sustainability. Second, the study integrates Oliver's (1991) strategic responses framework in the sustainability

management context to examine the strategic responses to institutional pressures for sustainability. Third, the case study shows how the use of sustainability control systems in strategic responses to institutional pressures for sustainability vary with the chosen strategy, and respective institutional pressures for sustainability. The findings provide empirical evidence to support that the use of sustainability control systems in strategic responses to institutional pressures for sustainability has influenced organisational changes and, in turn, the case organisation has been able to achieve some sustainability improvements over the years (such as also found in Lounsbury, 2008). Fourth, contrary to the long standing belief that the success of organisations operating in developing country is a function of conformity to institutional pressures, this study supports the proposition that organisations are not passive actors, but actively respond to institutional pressures (Oliver, 1991; Scott, 2001).

The study has implications for Western organisations, finding that suppliers committed to sustainability in Asia strategically respond to institutional pressures for sustainability as a means of strengthening outsourcing contracts, instead of merely accepting such pressures. The findings indicate that organisational performance seems to be a function of strategically responding to institutional pressures for sustainability rather than managing organisations by neglecting sustainability challenges. The organisational ability to embed MCS in strategically responding to institutional pressures for sustainability has the potential for long-term value creation. This study provides novel insights into the sustainability-MCS literature by exploring the use of sustainability control systems in strategically responding to institutional pressures for sustainability as a means of addressing sustainability challenges.

Paper 2: **Proactive sustainability strategy and corporate sustainability performance: The mediating effect of sustainability control systems**

Paper 2 aims to address the second research objective: examining the use of sustainability control systems in translating proactive sustainability strategies into corporate sustainability performance. More specifically, this paper examines the mediating effect of sustainability control systems on the relationship between proactive sustainability strategies and corporate sustainability performance. The extent to which organisations use sustainability control systems to enable the implementation of proactive sustainability strategies is theoretically underpinned by the NRBV of the firm (Hart, 1995) and levers of control framework (Simons, 1995).

Data for this study were collected from top managers in 175 multinational and local corporations operating in Sri Lanka and analysed using Partial Least Squares Structural

Equation Modeling. The study finds that sustainability control systems only partially mediate the relationship between proactive sustainability strategies and corporate sustainability performance. The mediating effect of sustainability control systems is examined under three sustainability strategies, where environmental and social strategies reveal a partial mediation, and economic strategy shows no mediation.

This study's research design, results, and contextual implications contribute to sustainability control systems and strategic management literature in the following ways. Responding to a wave of recent calls for studies to fill the gap in the sustainability control systems literature in relation to the lack of clear evidence on the formal managerial processes to implement proactive sustainability strategies as a means of achieving corporate sustainability performance, the study advances the use of sustainability control systems applications in the corporate sustainable development process (e.g. Perego and Hartmann, 2009; Schaltegger and Burritt, 2010; Gond et al., 2012; Merchant, 2012; Arjaliès and Mundy, 2013; Bebbington and Thomson, 2013; Schaltegger et al., 2013, Henri et al., 2014, 2015). The past sustainability control systems literature in sustainability strategy has largely focused on design characteristics of sustainability control systems and overlooks the use of sustainability control systems to implement sustainability strategy. Referring to the levers of control framework, this study provides empirical evidence to support the use of sustainability control systems to implement proactive sustainability strategies. In turn, it extends Simons' (1995) key proposition that the interplay of four levers of control positively influences the implementation of proactive sustainability strategies (Gond et al., 2012; Arjaliès and Mundy, 2013). In doing so, the study provides empirical evidence and a comprehensive view of sustainable development and attempts to resolve previous inconclusive findings between proactive sustainability strategies and corporate sustainability performance.

Paper 3: Sustainability innovation capabilities and competitive advantage: Enabling and controlling uses of sustainability control systems

Paper 3 examines the third research objective: the use of sustainability control systems in the implementation of sustainability dynamic capabilities. In particular, this study argues that the extent to which enabling and controlling uses of sustainability control systems moderate the relationship between sustainability innovation capabilities and sustainable competitive advantage.

Partial Least Squares Structural Equation Modeling is used to analyse survey data collected from top managers in 175 manufacturing and services sectors representing multinational and local organisations operating in Sri Lanka. The study finds that while the enabling use of sustainability control systems positively moderates the relationship between sustainability innovation capabilities and sustainable competitive advantage, in contrast, controlling use of sustainability control systems negatively moderates the relationship. The study compares the results for the manufacturing and services sectors and, contrary to expectation, finds no moderating impact for the services sector for either controlling or enabling sustainability control systems.

The study provides theoretical insights and practical implications concerning the importance of strategic alignment between managerial controls, dynamic capabilities, and competitive advantage in sustainability innovation management in the developing country context. First, as most prior studies have focused on the role of MCS in product innovation, the study addresses the use of sustainability control systems in sustainability innovation capabilities. In doing so, this study contributes to the literature relating to the role of sustainability control systems in sustainable development. Second, the study integrates all four levers of control as suggested by Simons (1995). This is particularly important to provide a comprehensive view of the use of sustainability control systems in innovation capabilities as most of the prior studies have largely focused on interactive and/or diagnostic levers. Third, responding to Chenhall and Moers (2015), this study provides evidence to support the use of MCS in innovation capabilities in the services sector. Finally, the study guides managers to understand the importance of the enabling use of sustainability control systems to foster dynamic innovation capabilities leading to competitive advantage.

1.4 OUTLINE OF THE THESIS

The thesis is organised as follows. Chapter 2 provides a review of literature of theoretical concepts and variables investigated to achieve the research objectives. These variables and concepts include institutional and RBV determinants of corporate sustainability, strategic responses to institutional and RBV sustainability determinants, and the use of sustainability control systems. Chapter 3 discusses the research design of the thesis. The chapter specifically discusses philosophical paradigms upon which the thesis is based, the reasons for using both qualitative and quantitative research designs, and analytical approaches. Chapters 4, 5 and 6 present the three empirical research papers prepared in the journal article format. More specifically, these self-contained papers consist of a separate list of references, appendixes,

tables, and figures. Chapter 7 discusses the overall findings in the thesis, theoretical and practical implications, limitations, and avenues for future research. The interview guide, survey instruments, and ethics approvals for the all three papers are provided in the Appendixes.

Chapter 2 : LITERATURE REVIEW

2.1 INTRODUCTION

The purpose of this chapter is to review the literature concerning the concepts investigated in the thesis as a whole, and to position the research underpinning this thesis within the extant literature. While the individual empirical papers presented in Chapters 4, 5 and 6 provide certain aspects of theoretical concepts and literature, this chapter attempts to provide a comprehensive discussion on the concepts, together with theoretical foundations followed by gaps in the existing literature. First, the chapter defines the term corporate sustainability by referring to the existing literature. Second, the determinants of corporate sustainability are discussed by referring to both the institutional and resource-based view (RBV) perspectives. Third, the chapter discusses proactive strategic responses to sustainability determinants: (i) where the proactive strategic responses to institutional sustainability determinants are proposed by referring to strategic responses to institutional process framework; and (ii) where the proactive strategic responses to RBV sustainability determinants are proposed drawing on the natural resource-based view (NRBV) of the firm. Fourth, the chapter discusses the use of sustainability control systems in proactive strategic responses to sustainability determinants in terms of (i) specifying and communicating sustainability objectives, (ii) monitoring sustainability performance, and (iii) motivation by linking sustainability rewards to performance. Finally, the chapter concludes by providing a summary of the review of the literature.

2.2 CORPORATE SUSTAINABILITY

Corporate sustainable development is a complex and multidimensional concept involving an organisation's internal and external environments, both of which are inextricably linked (Bansal, 2005). The term 'sustainability' has received considerable attention from academics and practitioners in the contemporary business world, and it appears that the importance of the concept is increasing. Yet, a definition of sustainability that suits the purposes of a range of academics, practitioners, and society more widely has become a challenging task (Montiel, 2008). As a result, various related concepts, such as corporate sustainability, sustainable development, corporate social performance, corporate social responsibility, social performance, and environmental management are used interchangeably in different disciplines to denote various aspects of the broad notion of sustainability (Montiel, 2008). The World Commission on Environment and Development (e.g. The Brundtland Commission, 1987, p. 8) provides one of the most cited definitions of sustainable development: "development which meets the needs

of the present without compromising the ability of future generations to meet their own needs". While this definition is widely recognised, researchers question its operational capacity and propose different, but related, definitions to examine corporate sustainability (Starik and Rands, 1995; Gray and Bebbington, 2001; Banerjee, 2003; Roth, 2008).

Emphasising the limitations of the Brundtland definition to capture the meaning of sustainability, Starik and Rands (1995, p. 909) define ecological sustainability as

> the ability of one or more entities, either individually or collectively, to exist and flourish (either unchanged or in evolved forms) for lengthy time frames, in such a manner that the existence and flourishing of other collectivities of entities is permitted at related levels and in related systems.

Similarly, arguing that the Brundtland definition is a slogan, but not a definition to denote sustainable development, Banerjee (2003) proposes that sustainable development can be achieved by an ethnocentric, capitalistic notion of efficiency. Nevertheless, Sharma and Henriques (2005) follow the Brundtland definition in their study of managers' perceptions of different stakeholder influences in the Canadian forest industry and the adoption of sustainability practices. They argue that unlike other industries that are dependent on non-renewable energy and extractive resources (e.g. petroleum and mining), the forest industry has a renewable resource base and meets the Brundtland definition of sustainable development. According to Van Marrewijk (2003, p. 102), corporate sustainability demonstrates "the inclusion of social and environmental concerns in business operations and interactions with stakeholders". Gladwin et al. (1995, p. 878) identify sustainable development as "a process of achieving human development...in an inclusive, connected, equitable, prudent, and secure manner". Shrivastava (1995b) proposes four mechanisms by which organisations can achieve ecological sustainability: (i) total quality environmental management; (ii) ecological sustainable competitive strategies; (iii) technology for nature swaps; and (iv) corporate population impact control. Gray (2010, p. 53) distinguishes the term sustainability as a state while sustainable development is defined as a "process through which we move toward (or perhaps away from) that state".

While there are a number of definitions to describe corporate sustainability, most sustainability proponents tend to focus on three interconnected dimensions – environmental, economic, and social aspects of sustainability – also known as the triple bottom line (Elkington, 1998; Bansal, 2005). These three dimensions are interdependent and are able to reinforce each other (Bansal, 2005). Bansal (2005, p. 199) asserts that organisations must apply economic prosperity, social equity, and environmental integrity "principles to their products, policies, and practices in order to express corporate sustainable development". Hence, to be sustainable and

to achieve a sustainable competitive advantage, an organisation must minimise the waste of inputs and optimise the value of outputs as well as achieve optimal value for stakeholders through social, environmental, and economic wellbeing (Bansal, 2005).

The environmental integrity dimension suggests that human activities should minimise their negative impact on land, air, and water resources (Bansal, 2005). For instance, human activities such as population growth, overconsumption of natural resources, decrease of biodiversity, ozone depletion, and increasing environmental pollution have been severely influencing environmental integrity in recent decades. The social equity dimension is aimed at ensuring that all the members in a society have equal rights to not only the basic needs, such as food, shelter, and clothing, but also other rights including education, healthcare, and political freedom (Bansal, 2005). The economic prosperity dimension proposes "a reasonable quality of life through the productive capacity of organisations and individuals in society" (Bansal, 2005, p. 198). This is to ensure that the creation and distribution of goods and services help to increase the standard of living. Failure to facilitate economic prosperity is likely to create conflicts amongst members in a society in the process of achieving a sense of equity (Bansal, 2005). Accordingly, following the prior literature (Aragón-Correa and Rubio-Lopez, 2007; Torugsa et al., 2013), this thesis examines the systematic and voluntary adoption of economic, environmental, and social corporate sustainability practices that go beyond the regulatory requirements as a means of achieving corporate sustainability performance. The next section discusses the determinants of corporate sustainability.

2.3 DETERMINANTS OF CORPORATE SUSTAINABILITY

Despite the complexity of defining the term corporate sustainability, research suggests that organisational ability to embed sustainability into organisational strategy leads to sustainable competitive advantage (Laszlo and Zhexembayeva, 2011). According to Hall (1993, p. 610), "companies have sustainable competitive advantage when they consistently produce products and/or delivery systems with attributes that correspond to the key buying criteria for the majority of the customers in their targeted market". Two leading theoretical frameworks have been most influential in the strategic management literature to explain the ways of gaining sustainable competitive advantage: (i) institutional theory; and (ii) the RBV of the firm (Oliver, 1997).[5] Oliver (1997) argues that both institutional capital and RBV capital are indispensable

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[5] According to Peng et al. (2008), the strategy tripod includes: (i) industry-based competition; (ii) firm-specific resources and capabilities; and (iii) institutional conditions and transitions. Peng et al. (2008) identify the institutional-based view as the third leg in the strategy tripod. The industrial-based model focuses on

to explaining sustainable competitive advantage. More specifically, the institutional perspective alone does not explain the potential of gaining sustainable competitive advantage, but it is also necessary to consider RBV of the firm (Oliver, 1997). This is particularly because "the context and process of resource selection have an important influence on firm heterogeneity and sustainable competitive advantage" (Oliver, 1997, p. 697).

Consistent with Oliver's (1997) argument, in the sustainability context, Bansal (2005) proposes that it is important to integrate both the institutional and RBV corporate sustainability determinants to understand how organisations achieve corporate sustainability performance. Bansal (2005) examines institutional and RBV perspectives to understand why organisations commit to corporate sustainable development. Recent research in corporate sustainability also provides evidence to support the notion that both institutional and RBV determinants influence organisational motivation and commitment to integrating sustainability into strategic decision making. For instance, Engert et al. (2016) propose a conceptual framework to examine the factors influencing the integration of corporate sustainability into strategic management, including organisational influences, internal and external drivers, and supporting and hindering factors. First, Engert et al. (2016) categorise organisational influences as internal (e.g. company size, scope and structure) and external (e.g. industry type, structure and position within the industry). Second, internal and external drivers include legal compliance, competitive advantage, cost reduction, economic performance, innovation, social and environmental responsibility, risk management, corporate reputation, and quality management. Third, supporting and hindering factors include, for instance, management control, stakeholder engagement, organisational learning and knowledge management, transparency and communication, manager attitude and behaviour, organisational culture, complexity, and investments. The following sections discuss the determinants of corporate sustainability through the lens of both the institutional and RBV perspectives (Oliver, 1997; Bansal, 2005).

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microeconomic and industrial traditions as a means of achieving sustainable competitive advantage (Porter, 1980, 1981, 1985; Hill, 1988). More specifically, the market or the industry exerts specific pressures upon which the organisation must operate and respond. Organisations may achieve sustainable competitive advantage by offering no-frills products at a low price or by offering differentiated products for a premium price (Porter, 1980, 1981, 1985). Thus, organisational survival and success is largely based on an ability to adapt to industry and market requirements, and failure to do so will have negative consequences. Thus, researchers argue that by focusing external characteristics as sources of competitive advantage this model overlooks the organisational distinctive competencies and resource-based deployments (Lado et al., 1992). This thesis refers to the institutional-based view and RBV view following Oliver's (1997) approach, and as applied by Bansal (2005) in the sustainability context. However, some aspects of the industry-based view are discussed under these two perspectives.

2.3.1 Institutional determinants of corporate sustainability

Institutional theory has developed as one of the prominent theories to explain organisational behaviour. The foundation of institutional theory lies in the perception that organisational success is a function of conforming to the institutional environment and, in turn, organisations become homogeneous (DiMaggio and Powell, 1983). This means that organisations conform to social norms of acceptable behaviour because doing so promotes the success and survival of organisations (Meyer and Rowan, 1977; DiMaggio and Powell, 1983; Scott, 1987; Covaleski and Dirsmith, 1988). According to DiMaggio and Powell (1983), organisational decisions are not always driven by rationality, but also concerns for legitimacy. Oliver (1997, p. 697) suggests that "a firm's institutional context includes its internal culture as well as broader influences from the state, society, and interfirm relations that define socially acceptable economic behaviour". While organisations have the liberty to function within the institutional context, the failure to comply with commonly accepted institutionalised norms and principles would negatively impact organisational legitimacy, resources, and eventually long-term survival (DiMaggio and Powell, 1983; Scott, 1987). As a way of avoiding such negative consequences, institutional theory argues that organisations tend to become isomorphic by complying with a common institutional environment in attaining legitimacy (DiMaggio and Powell, 1983). The term isomorphism refers to organisational compliance with institutional pressures. Organisations in the same field have a tendency to become homologous as institutional pressures motivate them to imitate industry leaders. For example, rather than making a purely internally driven decision to implement sustainability, organisations are likely to adopt sustainability practices driven by various external isomorphic pressures, such as government, competitors, and consumers.

DiMaggio and Powell (1983) propose three mechanisms of institutional existence or changes in routinised practices, namely coercive, normative, and mimetic isomorphism. Coercive isomorphism denotes both formal and informal institutional pressures exerted by individuals and organisations. More specifically, coercive pressures directly influence organisational practices. DiMaggio and Powell (1983, p. 150) indicate that

> organisational change is a direct response to government mandate: manufacturers adopt new pollution control technologies to conform to environmental regulations; non-profits maintain accounts, and hire accountants, in order to meet tax law requirements; and organisations employ affirmative-action officers to fend off allegations of discrimination.

Therefore, failure to comply with coercive pressures, for instance, imposed by powerful and influential stakeholders, is more likely to result in negative consequences, such as loss of

earnings, tarnished reputation, or even cancellation of the licence to operate the business (Pfeffer and Salancik, 1978; Oliver, 1991; Bansal, 2005).

Mimetic isomorphism characterises modelling or imitating structures and operations of other similar organisations as a means of reducing uncertainties (DiMaggio and Powell, 1983). Sustainability practices are often involved with significant uncertainties due to the changing nature of stakeholder expectations, and the complexities and difficulties associated with resolving sustainability issues (Bansal, 2005). Bansal (2005, p. 202) asserts that "firms will likely mimic the visible and well defined activities of others, such as environmental audits and certified environmental management systems, especially when these activities have been reported to outsiders".

Normative isomorphism denotes pressures to comply with norms and rules formulated by professional bodies (DiMaggio and Powell, 1983). DiMaggio and Powell (1983, p. 152) interpret professionalisation "as the collective struggle of members of an occupation to define the conditions and methods of their work, to control the production of producer". For instance, Meyer and Rowan (1977, p. 345) emphasise that "as the issues of safety and environmental pollution arise, and as relevant professions and programmes become institutionalied in laws, union ideologies and public opinion, organisations incorporate these programmes and professions".

Ingram and Silverman (2002, p. 20) suggest that "institutions directly determine what arrows a firm has in its quiver as it struggles to formulate and implement strategy and to create competitive advantage". Bansal (2005) argues that institutional theory applies to corporate sustainable development through (i) individual values and belief systems that assess organisational commitment towards sustainability, thereby evaluating organisational legitimacy and social acceptability, (ii) social actors' discussion and debate as to whether organisations follow commonly accepted norms and beliefs, and (iii) sustainability elements that are increasingly institutionalised via regulations and international agreements. According to Jennings and Zandbergen (1995, p. 1015), "institutional theory helps to understand how consensus is built around the meaning of sustainability and how concepts or practices associated with sustainability are developed and diffused amongst organisations".

Institutional determinants of sustainability practices have been examined from different perspectives, such as expectations for integrity, respect, standards, and accountability

(Waddock et al., 2002), and stakeholder pressures and management perception of sustainability (Delmas and Toffel, 2004; Sharma and Henriques, 2005; Garcés-Ayerbe et al., 2012), environmental disclosures and stakeholder expectations (Huang and Kung, 2010), patterns of environmental responses to stakeholder pressures (Murillo-Luna et al., 2008), stakeholder environmental influence on service firms (Rueda-Manzanares et al., 2008), and organisational adoption of environmental practices (Sarkis et al., 2010).

Many studies have examined institutional determinants that can influence corporate sustainability, including, for instance, government and regulatory bodies, professional and industrial associations, competitors, customers and investors, international and transnational organisations, and community and interest groups (Bansal and Roth, 2000; Bansal, 2005; Delmas and Toffel, 2008; Colwell and Joshi, 2013). Following the institutional theory, the following section discusses various institutional pressures for sustainability under coercive, mimetic and normative pressures.

Coercive institutional pressures for sustainability

Institutions that influence coercive sustainability pressures include, for example, government and regulatory bodies, community and interest groups, customers, and international and transnational institutions.

Government and regulatory bodies: Government and regulatory bodies have been one of the most powerful forces of coercive sustainability pressure on organisations (e.g. Bansal and Roth, 2000; Majumdar and Marcus, 2001; Bansal, 2005; Clemens and Douglas, 2005; Porter and Kramer, 2006; Delmas and Toffel, 2008; Colwell and Joshi, 2013). Regulatory bodies may impose fines and penalties or even remove an organisation's licence to operate if in violation of environmental regulations or labour policies. Jones (1999) argues that government regulations, institutional arrangements, and public policies on national economic development have considerable influence on corporate social responsibility decisions. Sustainability-related regulations also influence the intensity of the adoption of environmental practices in a particular context (Chan, 2005; González-Benito and González-Benito, 2006). While there is no conclusive evidence on the relationship between the intensity of regulations and location of production plants (Jaffe et al., 1995), stringent regulations have a negative impact on the location of industrial facilities (Keller and Levinson, 2002). On the other hand, organisations with less proactive sustainability approaches are more likely to be located in contexts where the regulations are not stringent (González-Benito and González-Benito, 2006). Nevertheless,

Porter and Van der Linde (1995a, 1995b) argue that regulations also motivate organisations to take proactive approaches in responding to sustainability determinants and, in turn, will lead to sustainable competitive advantage. Bansal (2005) also claims that fines and penalties imposed by regulators are positively associated with corporate sustainable development.

Community and interest groups: The context within which an organisation's production and operational facilities are located seems to influence the nature of organisational responses to sustainability determinants (Berry and Rondinelli, 1998; Bansal and Roth, 2000). Local communities and interest groups are likely to impose environmental pressures on organisations through their voting rights in local and national elections or by taking legal action against organisations that violate acceptable sustainability practices (Delmas and Toffel, 2004). Importantly, social pressures for sustainability seem to be greater in environmentally sensitive locations, such as in large cities, regions with natural resources, and industrial estates (González-Benito and González-Benito, 2006). Research also argues that sociocultural systems, such as property rights capitalism and stakeholder capitalism influence sustainability practices (Jones, 1999). For example, Jones (1999, p. 167) indicates that:

> Social responsibility as it manifests in actions by firms appears to be a function of the industry in which said firms are embedded. These industry effects may themselves emanate from the sector in which a particular industry is located, whether it is a capital goods or consumer oriented industry, the overall profile of the industry in terms of its public visibility and the degree of scrutiny from government and the public it operates under, the competitive structure of the industry, the overall historically determined culture of the industry.

Customers: Requirements and demands from customers for sustainable products and services are a significant influence for organisations (Delmas and Toffel, 2004; González-Benito and González-Benito, 2006). The customer–supplier relationship is probably the most powerful force that influences organisations to maintain quality standards. Customers in developed countries are likely to influence suppliers in emerging economies to comply with certain sustainability practices (Christmann and Taylor, 2001). Research also provides evidence to support the view that customers in the consumer goods industry are concerned with sustainability issues relating to product safety and environmental externalities as these concerns are directly related to consumer perception and purchase decisions (Lerner and Fryxell, 1988). An organisation's position in the value chain or proximity to the final consumer within the supply chain also tends to influence sustainability responses (González-Benito and González-Benito, 2006). Porter and Kramer (2006, p. 11) note that "nearly every aspect of the company's value chain reinforces the social dimensions of its value proposition". If the manufacturer's

position is higher in the supply chain, then intensity might be reduced. Jones (1999, p. 163) argues that "smaller, closely held firms in profitable niches are in the optimum position to practice stakeholder management, assuming the management of these firms is predisposed to do so". On the other hand, retailers put pressure on suppliers in developing country to follow strict sustainability practices, including to comply with local regulations, adopt international standards, and achieve certification.

International and transnational institutions: International and transnational institutions that monitor sustainability practices include, for example, the International Standards Organisation, International Labour Organisation, United Nations Global Compact, Fair Trade International, World Bank, and the World Trade Organisation (e.g. Bansal and Roth, 2000; Perego and Hartmann, 2009). Institutional pressures from organisations such as these significantly influence the operational practices of local organisations. Depending on the nature of the industry agreements and operations, these organisation may be required to comply with globally accepted sustainability standards and practices (Jones, 1999; González-Benito and González-Benito, 2006).

Mimetic institutional pressures for sustainability

Pressures from competitors have been a crucial factor in determining organisational responsiveness to corporate sustainability (Porter and Kramer, 2006). Porter and Kramer (2006, p. 5) suggest that "a company must integrate a social perspective into the core frameworks it already uses to understand competition and guide its business strategy". Competition amongst industry participants has been a major motivating factor for organisational responsiveness in relation to sustainability with the potential to influence success in a dynamic business environment (Bansal and Roth, 2000). Organisations motivated by sustainability competitiveness tend to improve performance in terms of energy and waste management, increased output and decreased input sources, and the introduction of eco-products, eco-labelling and green marketing (Bansal and Roth, 2000). However, organisations that face difficulties in initiating and implementing their own sustainability practices tend to imitate visible and well-established practices and procedures implemented by competitors (Bansal, 2005). Therefore, organisations that mimic their peers are less likely to face difficulties in public or financial sanctions due to complying with commonly practised legitimacy (Bansal, 2005).

Normative institutional pressures for sustainability

Industry type and pressures from industry associations and professional bodies have been significant forces that influence organisations to engage with sustainable endeavours (Bansal, 2005; Colwell and Joshi, 2013). Porter (1981, 1985) argues that industry factors have a significant impact on organisational competitive position and strategic options. Research suggests that organisational structure and position in an industry impacts strategic position in terms of adopting corporate sustainability (Mazutis, 2013).

Industry type tends to be a factor in the adoption of sustainability practices because of, for example, pollution potential, control differences, institutional monitoring, and influence from external stakeholders (González-Benito and González-Benito, 2006; Ferreira et al., 2010). For example, in the apparel manufacturing industry there is a growing pressure for large-scale fashion retailers to follow sustainability practices due to criticisms over the sustainability issues in manufacturing plants in developing country. These industrial differences include prioritisation of sustainability determinants and integration into strategy (Banerjee, 2002), projected and perceived benefits of the adoption of ISO14001 (Vastag and Melnyk, 2002), and the amount of emissions and voluntary participation in pollution prevention activities (Arora and Cason, 1996). For instance, organisations operating in the oil, chemical, and paper industries are more likely to be influenced by sustainability pressures due to the environmental sensitivity of operations. On the other hand, due to the nature of operations and environmental sensitivity, manufacturing corporations are more likely than service organisations to be influenced by external stakeholders. Industry associations and professional bodies may introduce industry specific standards and practices with which organisations in the industry are expected to comply. For instance, organisations operating in the oil, gas and mineral industries should comply with the Extractive Industries Transparency Initiatives.

2.3.2 Resource-based view determinants of corporate sustainability

The RBV of the firm identifies an organisation as a combination of both tangible and intangible resources and capabilities that help to gain competitive advantage (Barney, 1991; Grant, 1991). While tangible resources consist of financial reserves, plant and equipment, and raw material, intangible resources consist of organisational reputation, culture, and intellectual capital (Grant, 1991). Capabilities are the organisational skills and abilities that integrate and manage these resources (Barney, 1995). The RBV advances the idea that "a firm's competitive position is defined by a bundle of unique resources and relationships" (Rumelt, 1984, p. 557). The RBV of the firm proposes a more intimate approach to examining competitive advantage and

understanding how competitive advantage within organisations is sustained over time (Hitt and Ireland, 1985; Barney, 1988, 1991, 1995; Dierickx and Cool, 1989; Reed and DeFillippi, 1990). The RBV emphasises that not all capabilities and resources are strategically important for sustainable competitive advantage, however, only the resources and capabilities that are valuable, rare, inimitable and non-substitutable generate sustainable competitive advantage as competitors cannot easily replicate them (Dierickx and Cool, 1989; Barney, 1991, 1995; Peteraf, 1993). Barney (1991) asserts that the resources must be valuable to enable an organisation to formulate and implement strategies that improve its effectiveness. If resources are unique, inimitable and non-substitutable an organisation can implement a value-creating strategy that differs from its competitors.

If the foundation of a competitive advantage is supported by internal capabilities, the desired outcome of an organisation's efforts will result in gaining a competitive advantage that is sustainable (Barney, 1991). If the foundation of competitive advantage is simply copied or imitated, then the benefit an organisation can draw is minimised. Bansal (2005) argues that the RBV of the firm applies to corporate sustainable development as (i) it is associated with organisational performance, (ii) requires investments in financial and human resources, and (iii) creates new opportunities through changes in technology, legislation, and market forces. While there are a number of RBV determinants that influence corporate sustainability, Bansal (2005) identifies three factors: (i) organisational slack; (ii) international experience; and (iii) capital management.

Organisational slack: Bourgeois (1981, p. 30) defines organisational slack as a "cushion of actual or potential resources which allows an organisation to adapt successfully to internal pressures for adjustment or to external pressures for change". Large-scale organisations are more likely to be influenced by sustainability pressures when compared to small scale organisations (González-Benito and González-Benito, 2006; Henri and Journeault, 2010; Brammer et al., 2012; Pondeville et al., 2013; Lisi, 2015). This is because of their resource availability and commitment, economies of scale, public visibility, cost savings capabilities in terms of involvement in large-scale sustainability investments such as technology, human resources and certifications, and widespread benefit for a large number of stakeholders (Bansal, 2005; González-Benito and González-Benito, 2006; Lisi, 2015). As larger scale organisations get more bureaucratised, their flexibility is more likely to be methodically linked with organisational size than with age (Jones, 1999).

Research also reveals that organisational size and resource availability positively influence participation in voluntary sustainability programs (Arora and Cason, 1996), adoption of ISO14001 (King and Lenox, 2001), adoption of environmentally friendly purchasing and logistic practices (Murphy et al., 1995), adoption of environmental practices in the services sector (Gil et al., 2001), implementation of environmental practices (Melnyk et al., 2003), internal corporate sustainability processes and integration into strategic management, and integration of environmental policies and programs (Levy, 1995).

On the other hand, studies also contend that organisational size has little or no impact on the integration of sustainability into decision making (Russo and Fouts, 1997; Klassen and Whybark, 1999; Siebenhüner and Arnold, 2007). For instance, Torugsa et al. (2013, p. 397) in line with the RBV theory conclude that "the argument that size, a common proxy for organisational resources, is a relevant but not deterministic factor for the adoption of proactive corporate social responsibility in SMEs [small and medium size enterprises]". Consistent with Torugsa et al. (2013), Yu and Chen (2014) suggest that organisational commitment to corporate sustainability takes place irrespective of organisational size. Research also provides empirical evidence to support that organisational-based resources, such as corporate reputation, learning capabilities, and product quality seem to influence organisational responsiveness towards sustainability (Hart, 1995; Shrivastava, 1995a; Russo and Fouts, 1997; Bansal and Roth, 2000).

International experience: Organisational engagement with international operations influences corporate sustainability efforts in (i) knowledge transferring amongst subsidiaries and adoption of innovative product and process designs (Dunning, 1995; Gupta and Govindarajan, 2000; González-Benito and González-Benito, 2006), and (ii) complying with stringent sustainability requirements in countries where multinational organisations operate (Rugman and Verbeke, 1998; González-Benito and González-Benito, 2006). International operations are also subject to differences in regulatory pressures, compliance with international and local sustainability standards (e.g. ISO14001), multinational ownership, implementation of environmental practices, and global reputation (Christmann and Taylor, 2001; Gil et al., 2001; Chan, 2005; González-Benito and González-Benito, 2006).

Capital management capabilities: Bansal (2005) finds that capital management capabilities positively influence sustainable development because (i) capital intensive projects have a significant impact on communities when compared to service intensive projects, (ii) there are differences in the integration of stakeholders in decision making processes; (iii) there

are benefits derived from continuous improvements and innovations; and (iv) they lead to the adoption of best practice and superior technology.

In addition to factors considered by Bansal (2005), the literature also suggests other RBV sustainability determinants. For instance, organisational strategic attitudes and priorities influence the choice of sustainability practices (González-Benito and González-Benito, 2006). Bansal and Roth (2000) reveal that organisations considering ecological responsibility as a corporate moral or value are more likely to adopt sustainability initiatives. Organisations that focus on initiatives to change strategic policies in advance are more likely to be environmentally proactive (Aragón-Correa, 1998). Top management's support has been key to the implementation of sustainability strategic priorities (Hunt and Auster, 1990; Berry and Rondinelli, 1998; Bansal and Roth, 2000; Norris and O'Dwyer, 2004; Colwell and Joshi, 2013; Epstein and Buhovac, 2014). Top management's attitudes, personal values, philosophy, and commitment towards the implementation of proactive sustainability strategies are essential because they are able to approve the physical and financial resources required for the implementation of sustainability strategies without any difficulty, and have the capacity to facilitate the coordination and collaboration of activities amongst divisions and departments for implementation of sustainability strategies (Bansal and Roth, 2000; González-Benito and González-Benito, 2006). Organisations with sustainability-committed top management are more likely to adopt ISO14001 (Quazi et al., 2001), prioritise sustainability practices within organisations by establishing environmental departments and appointing sustainability managers (Del Brio et al., 2001), and influence the organisation's choice of environmental strategy (Vastag et al., 1996). Top management's belief, ethical motives, expectations, values perceptions and opinions not only influence internal sustainability practices (Bansal and Roth 2000; Banerjee 2001), but also create opportunities to implement proactive strategies rather than threatening such practices (Sharma and Nguan, 1999). Previous studies also propose that the organisational structure should be modified in accordance with the integration of corporate sustainability, including integration procedures and policies at the top management levels (Siebenhüner and Arnold, 2007; Yu and Chen, 2014).

2.4 PROACTIVE STRATEGIC RESPONSES TO CORPORATE SUSTAINABILITY DETERMINANTS

As discussed in the above sections, the literature provides conceptual and empirical evidence to support that both institutional and RBV determinants tend to influence corporate sustainability. Yet, the current sustainability literature does not provide sufficient evidence to

support how organisations use proactive strategic responses to both the institutional and RBV corporate sustainability determinants. The following sections discuss the possible proactive strategic responses to sustainability determinants by referring to Oliver's (1991) strategic responses to institutional pressures framework and the NRBV of the firm (Hart, 1995).

2.4.1 Strategic responses to institutional pressures for sustainability

The question of how organisations should respond to institutional pressures for sustainability has gained much attention due to its inevitable impact on organisational success and, in turn, consequences on society at large (Norris and O'Dwyer, 2004; Bansal, 2005; Delmas and Toffel, 2008; Durden, 2008; Perego and Hartmann, 2009; Ball and Craig, 2010; Pondeville at al., 2013; Rodrigue et al., 2013). Contemporary institutional researchers contend that organisations tend to strategically respond to institutional pressures with active agency and organisational self-interests instead of blindly accepting institutional pressures (Oliver, 1991; Lounsbury, 2008). Tucker and Parker (2015, p. 119) note that:

> More recent developments in NIS [Neo-institutional sociology] theorising recognise that organisations do not always blindly mimic or acquiesce in the face of such institutional pressures … rather, institutionalisation must deal with episodes of organisational resistance that can vary from manipulation to deferral, avoidance, outright rejection of compromise.

Early institutional thought proposes that organisational success is not based on mere conformity to institutional demands, but instead on strategic responses that lead to enhanced performance (Oliver, 1991; Suchman, 1995; Greenwood and Hinings, 1996). Oliver (1991) proposes a framework of strategic responses to institutional process by highlighting the organisational responses to institutional pressures that vary from passive compliance to proactive manipulation. Oliver (1991) argues that organisations do not blindly comply with institutional pressures, but rather proactively and strategically respond using a continuum of five strategies: acquiescence; compromise; avoidance; defiance; and manipulation. According to Oliver (1991, p. 146), "… institutional theory can accommodate interest-seeking, active organisational behaviour when organisations' responses to institutional pressures and expectations are not assumed to be invariably passive and conforming across all institutional conditions". Table 2.1 depicts the continuum of strategic responses and respective tactics that can be used under each response.

The theoretical rationale of strategic responses to institutional pressures is influenced by both the willingness and ability of organisations to comply with institutional demands

(Oliver, 1991). More precisely, Oliver (1991, p. 159) asserts that "organisational responses to institutional pressures towards conformity will depend on why these pressures are being exerted, who is exerting them, what these pressures are, how or by what means they are exerted, and where they occur". Oliver (1991) refers to these institutional factors as cause, constituent, content, control, and context, respectively.

TABLE 2. 1 STRATEGIC RESPONSES TO INSTITUTIONAL PROCESS

Strategies	Tactics	Examples
Acquiesce	Habit	Following invisible, taken-for-granted norms
	Imitate	Mimicking institutional models
	Comply	Obeying rules and accepting norms
Compromise	Balance	Balancing the expectations of multiple constituents
	Pacify	Placating and accommodating institutional elements
	Bargain	Negotiating with institutional stakeholders
Avoid	Conceal	Disguising nonconformity
	Buffer	Loosening institutional attachments
	Escape	Changing goals, activities, or domains
Defy	Dismiss	Ignoring explicit norms and values
	Challenge	Contesting rules and requirements
	Attack	Assaulting the sources of institutional pressure
Manipulate	Co-opt	Importing influential constituents
	Influence	Shaping values and criteria
	Control	Dominating institutional constituents and processes

Source: Oliver (1991, p. 152)

Table 2.2 presents the five institutional factors, research questions, and the respective predictive dimensions within which strategic responses are based.

TABLE 2.2 ANTECEDENTS OF STRATEGIC RESPONSES

Institutional Factor	Research Questions	Predictive Dimensions
Cause	Why is the organisation being pressured to conform to institutional rules or expectations?	Legitimacy or social fitness Efficiency or economic fitness
Constituent	Who is exerting institutional pressure on the organisation?	Multiplicity of constituent demands Dependence on institutional constituents
Content	To what norms or requirements is the organisation being pressured to conform?	Consistency with organisational goals Discretionary constraints imposed on the organisation
Control	How or by what means are the institutional pressures being exerted?	Legal coercion of enforcement Voluntary diffusion of norms
Context	What is the environmental context within which institutional pressures are being exerted?	Environmental uncertainty Environmental interconnectedness

Source: Oliver (1991, p. 160)

Oliver (1991) proposes that organisational strategic choices will depend on the extent of variations of the ten dimension of the five institutional factors. Table 2.3 provides the variations of five strategic responses to each predictive factor, together with respective dimensions. For instance, as shown in the first row of Table 2.3, while organisations are more likely to acquiesce to institutional pressures when the conformity tends to offer a high degree of legitimacy, in contrast, compromise, avoidance, defiance, and manipulation responses would occur when the degree of legitimacy is low.

TABLE 2.3 INSTITUTIONAL ANTECEDENTS AND PREDICTED STRATEGIC RESPONSES

Predictive Factor	Strategic Responses				
	Acquiesce	**Compromise**	**Avoid**	**Defy**	**Manipulate**
Cause					
Legitimacy	High	Low	Low	Low	Low
Efficiency	High	Low	Low	Low	Low
Constituent					
Multiplicity	Low	High	High	High	High
Dependence	High	High	Moderate	Low	Low
Content					
Consistency	High	Moderate	Moderate	Low	Low
Constraint	Low	Moderate	Moderate	High	High
Control					
Coercion	High	Moderate	Moderate	Low	Low
Diffusion	High	High	Moderate	Low	Low
Context					
Uncertainty	High	High	High	Low	Low
Interconnectedness	High	High	Moderate	Low	Low

Source: Oliver (1991, p. 160)

While Oliver's (1991) framework has been widely used in understanding strategic responses to institutional pressures in the general organisational context (e.g. Suchman, 1995; Greenwood and Hinings, 1996), only a limited number of prior studies have examined strategic responses to institutional pressures for sustainability. Bansal and Roth (2000) refer to this framework in examining organisations' environmental responses. Examining how multinational organisations in the oil industry strategically respond to conflicting institutional pressures for global climate change, Levy and Kolk (2002) find that while local pressures influenced initial organisational responses, convergent pressures were high when the issue became mature. Delmas and Toffel (2008) reveal that managers at different organisational facilities tend to adopt distinct management practices to satisfy different external institutional constituents that interact with influential corporate departments. Research also suggests that corporate responsiveness to institutional pressures is improved when the top management's environmental commitment is high (Colwell and Joshi, 2013). Iarossi et al. (2013) find that organisations primarily respond to institutional pressures for sustainability challenges using manipulation and acquiescence strategies. Beddewela and Fairbrass (2015), in a recent study on how multinational enterprises operating in Sri Lanka seek legitimacy using corporate social

responsibility strategies, find that multinational organisations use manipulation and compromise as strategic responses. While there is a growing interest in examining how organisations use strategic responses to institutional pressures for sustainability, the extant research provides less evidence about whether and how organisations use all strategic responses in their proactive strategic responses to institutional pressures for sustainability, and the respective internal managerial processes to support such strategic responses.

2.4.2. Proactive strategic responses to resource-based view sustainability determinants[6]

While the RBV of the firm is the most dominant framework to understand sustainable competitive advantage, the theory has also been criticised for lacking mechanisms to convert resources to sustainable competitive advantage (Teece et al., 1997; Eisenhardt and Martin, 2000). Hart (1995) proposes the NRBV of the firm arguing that while the RBV of the firm is suitable to explain the potential of achieving sustainable competitive advantage through general capabilities, the theory is not capable of explaining sustainable competitive advantage when organisations interact with the natural environment. Hart and Dowell (2010, p. 1465) indicate that:

> While it [RBV] considered a variety of potential resources and had a logic that was compelling and more complete than prior attempts to explain competitive advantage, it ignored the interaction between an organisation and its natural environment. While such an omission might have been understandable in the past, it was clear by 1995 (and is more so now) that the natural environment could create a serious constraint on firms' attempts to create sustainable advantage.

Hart (1995) proposes that organisations' ability to proactively integrate sustainability determinants into strategic processes leads to sustainable competitive advantage. The NRBV of the firm proposes three proactive sustainability strategies that lead to sustainable competitive advantage: a pollution prevention strategy, a product stewardship strategy and a sustainable development strategy. As proposed in the NRBV, Figure 2.1 depicts the three proactive sustainability strategies, and their impact on competitive advantage and social legitimacy.

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[6] This thesis examines proactive strategic responses to RBV sustainability determinants as the extent to which organisations implement 'proactive sustainability strategies' (as examined in Paper 2) and 'sustainability innovation capabilities' (as examined in Paper 3). The study does not inend to examine the relationship between the RBV sustainability determinants (as discussed in the section 2.3.2), and 'proactive sustainability strategies' and 'sustainability innovation capabilities'. Bansal (2005) provides some empirical evidence on this relationship. As per the NRBV of the firm, it is assumed that organisations implement 'proactive sustainability strategies' and 'sustainability innovation capabilities' in response to RBV sustainability determinants as a means of achieving sustainable competitive advantage.

FIGURE 2-1 SUSTAINED COMPETITIVE ADVANTAGE

	Internal (Competitive Advantage)	External (Social Legitimacy)
Pollution Prevention	Tacit (Causally ambiguous) For example, total quality environmental management(TQEM)	Transparency Public scrutiny
Product Stewardship	Social complex (Process based) For example, design for environment (DfE)	Stakeholder integration External advisors
Sustainable Development	Rare (Firm specific) For example, shared vision	Collaboration Technology organisation

Source. Hart (1995, p. 999)

Pollution prevention strategy aims to prevent waste and emissions during the production process, which can reduce product and services costs (Hart, 1995). Pollution prevention will enhance resource efficiency in terms of reducing the required inputs, simplifying the process, and reducing compliance and liability costs (Hart, 1995; Hart and Dowell, 2011). Product stewardship strategy expands the pollution prevention strategy into the organisation's entire product life-cycle, including broader stakeholders. This practice focuses the 'voice of the environment', which is the external stakeholders' perspective, in integrating environmental concerns into the product design and development process. For instance, Hart (1995, p. 1001) suggests that "firms that adopt product stewardship strategies will evidence inclusion of external stakeholders in product-development and planning processes". Product stewardship will create sustainable competitive advantage by strategically preventing the negative impacts of environmental concerns (Hart, 1995; Hart and Dowell, 2011). For instance, organisations can develop contracts with suppliers to provide environmentally friendly raw materials, avoid environmentally hazardous operations, and redesign existing production systems to reduce liability, develop environmentally friendly products with lower life-cycle cost, and adopt advanced systems to enhance the efficiency.

Sustainable development strategy, which includes all environmental, economic and social sustainability strategies, focuses on maintaining environmentally friendly production processes (Hart, 1995; Hart and Dowell, 2011). More specifically, this perspective is aimed at formulating and implementing a sustainability strategy that benefits broader stakeholders in less developed countries, who contribute to the organisation's product life-cycle by various means (Hart, 1995; Hart and Dowell, 2011). Hart (1995, p. 997) proposes that "firms (either multinational or local)

that are focused on generating short-term profits at the expense of the environment are therefore unlikely to establish long-term positions in the developing world". In other words, the notion of a sustainable development strategy aims to support sustainable development in developing country (Prahalad and Hart, 2002; Hart and Dowell, 2011). Prahalad and Hart (2002) argue that business organisations can help eradicate poverty and enhance the livelihood of the developing country by implementing a sustainable development strategy. The success of operating businesses in these markets therefore largely depends on both local and multinational organisations' ability to develop a sustainable development strategy with substantial investments and a long-term commitment. By considering both dynamic capability and sustainability perspectives, Hart and Dowell (2011, p. 1473) state that "the dynamic capability perspective … is particularly well suited to the study of clean technology and BoP strategies because the context in which firms develop capabilities to deal with these issues is highly complex and ambiguous".

Natural-resource-based view of the firm and dynamic capabilities

Researchers also argue that strategies proposed in the NRBV of the firm satisfy the requirements to be considered as dynamic capabilities (Aragón-Correa and Sharma, 2003; Hart and Dowell, 2011). Teece et al. (1997) contend that the scope of the RBV of the firm is limited in addressing how organisations can renew distinctive competencies in a rapidly changing environment. Expanding on the RBV, Teece et al. (1997) propose the notion of dynamic capabilities, which is underpinned by the idea that organisational growth and success is a function of internal organisational resources and capabilities. They define dynamic capabilities as "the firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments" (Teece et al., 1997, p. 516). Teece et al. (1997) suggest that dynamic capabilities consider sources of competitive advantage with the aim of identifying specific capabilities that can be sources of sustainable competitive advantage and explain how these capabilities could create resources given the rapidly changing environmental, social and economic conditions. Teece et al. (1997) propose that capabilities that are static in nature inhibit sustainable competitive advantage and organisational performance and that the most important means of gaining a sustainable competitive advantage in this rapidly changing environment is to adapt with strategic flexibility and capabilities.

Hart and Dowell (2011, p. 1473) comment that the dynamic capability approach "offers the potential to extend and supplement the NRBV of the firm to create a more thorough

understanding of the process by which firms undertake sustainable development strategies". Proactive organisations consider developing dynamic capabilities, such as relational, learning and innovation capabilities as important requirements to gain competitive advantage through sustainability strategies (Hart and Dowell, 2011). Amongst other organisational capabilities, innovation has been identified as one of the major strategic priorities of corporate sustainability (Van Bommel, 2011). Strategically proactive organisations do things differently by initiating innovative practices under uncertain conditions, employ flexible technologies, and even enter new markets (Aragón-Correa, 1998). Cronin et al. (2011) identify green alliances and green innovation as two prominent sustainability strategies that contemporary businesses struggle to deal with. Cronin et al. (2011, p. 164) argue that "the roles played by various stakeholders in the development, evaluation, and implementation of innovative green products and strategies can dramatically impact the frequency and success of green product innovation". Moreover, manufacturing proactivity, in terms of adopting new technology and leading productions and operations, is also associated with the implementation of voluntary environmental management practices (González-Benito and González-Benito, 2005). Hart and Milstein (2003, p. 62) also state that sustainability innovations "present the opportunity for firms […] to reposition their internal competencies around more sustainable technologies". Research also demonstrates that innovations influence corporate sustainability and vice versa (e.g. Engert et al., 2016). Valentine (2010) contends that organisations do not only achieve competitive advantage through technical innovations, but also by integrating stakeholder concerns and adopting social innovations. Recent research evidence also suggests that innovation, continuous improvements, and strategic management practices are important for organisations to integrate corporate sustainability (Sharma, 2014).

Fifteen years after the introduction of the NRBV, Hart and Dowell (2011, p. 1466) emphasise that "most of the application of the NRBV has been focused on pollution prevention, with much less attention to empirical research on product stewardship or sustainable development strategies". Hart and Dowell (2010, p. 1474) further highlight that:

> Traditionally, legitimacy depends upon a stable set of institutional actors that are capable of determining what is and what is not a legitimate action for a given field. The very act of undertaking a BoP initiative, however, might be seen as illegitimate in some settings...for firms that are operating in the BoP, however, it is unclear how legitimacy is gained and maintained and what linkages to other actors might be needed. Understanding this dynamic better will help to illuminate the processes by which firms gain a "licence to operate" within the BoP and maintain the legitimacy required to profit from those ventures.

The extant literature provides empirical evidence to support the NRBV of the firm's propositions in regards to corporate sustainability efforts in emission reduction and financial performance (Hart and Ahuja, 1996), and the application of the NRBV of the firm in emerging economies (Chan, 2005). Although a few studies, such as Chan (2005) and Fowler and Hope (2007), have attempted to contribute to this relationship by incorporating major antecedents and consequences, such attempts have not been able to draw a comprehensive picture. By referring to the NRBV of the firm, in a recent study, Alt et al. (2015) reveal that proactive environmental strategies translate employee stakeholder engagement into environmental performance. Hart and Dowell (2011, p. 1470) conclude that "the academic literature on the link between sustainable development strategies and firm performance is virtually nonexistent".

While the current sustainability management literature examining competitive advantage has drawn attention to the need to understand the sources of sustainable competitive advantage (Wagner, 2005, Porter and Kramer, 2006, Bilgin, 2009, Mariadoss et al., 2011), examining the use of internal managerial processes to support the implementation of proactive sustainability strategies and dynamic capabilities has gained momentum in the management control systems (MCS) literature (Gond et al., 2010; Arjaliès and Mundy, 2013; Crutzen and Herzig, 2013; Epstein and Buhovac, 2014; Journeault, 2016). More specifically, Wilden et al. (2013, p. 72) emphasise that "research within the dynamic capabilities field has largely ignored bounding assumptions, such as environmental conditions and organisational structure". Thus, there is a need to examine the internal managerial controls that facilitate the implementation of dynamic capabilities. In particular, the existing literature provides less evidence on the use of MCS in supporting sustainability dynamic capabilities (e.g. Crutzen and Herzig, 2013; Journeault, 2016). The existing gaps in the literature emphasise the necessity of examining the use of MCS to support proactive strategic responses to sustainability determinants as a means of achieving competitive advantage by taking into account all three underlying sustainability dimensions.

2.5 ROLE OF MANAGEMENT CONTROL SYSTEMS IN PROACTIVE STRATEGIC RESPONSES TO SUSTAINABILITY DETERMINANTS

As discussed in the above sections, organisations are more likely to use proactive strategic responses in responding to corporate sustainability determinants. However, the problems remain in relation to proactive strategic responses to sustainability determinants as to whether, how, and what internal managerial processes support strategic responses. The following sections discuss the potential role of MCS in proactive strategic responses to sustainability determinants.

2.5.1 Management control systems

Organisations use MCS to ensure the optimum use of resources throughout the inputs, process, and outputs relationships (Anthony, 1965; Otley and Berry, 1980; Abernethy and Brownell, 1997; Chenhall, 2003). MCS facilitate decision making by (i) specifying and communicating objectives, (ii) monitoring performance through measurement (feedback/control), and (iii) motivating employees to accomplish objectives by linking reward systems to objective achievement (Otley and Berry, 1980; Emmanuel et al., 1985; Lindsay et al., 1996). However, Macintosh (1994, p. 2) argues that MCS only represent a subset of the entire organisational controls system: "… management accounting systems are only part, albeit usually a very important part of the entire spectrum of control mechanisms used to motivate, monitor, measure and sanction the actions of managers and employees in the organisations".

The conventional wisdom of implementing MCS has been to provide information in enhancing technical and operational efficiency through planning and control (Burns and Scapens, 2000). Anthony (1965, p. 17) defines MCS as "the process by which managers ensure that resources are obtained and used efficiently in the accomplishment of the organisation's objectives". From the goal congruence point of view, Flamholtz et al. (1985, p. 36) define MCS as the "techniques and processes to achieve goal congruence which may be designed for all levels of behavioural influence: individual, small groups, formal subunits and the organisation as a whole". Emphasising the strategic role of MCS, considering both the managerial and organisational perspectives, Otley and Berry (1994) identify MCS as a set of procedures and processes that are used by managers to accomplish managerial goals and organisational objectives.

MCS not only motivate employees to engage in activities that will enhance the achievement of organisational goals, but also set boundaries to certain activities that employees should refrain from doing (Anthony, 1965; Merchant, 1985). Merchant and Van der Stede (2007, p. 8) indicate that, from the employees' perspective, "it is people in the organisation who make things happen. Management controls are necessary to guard against the possibilities that people will do something the organisation does not want them to do or fail to do something they should do". According to Sprinkle (2003, p. 302), "the use of managerial accounting information for decision-facilitating purposes is intended to improve employees' knowledge, thereby enhancing their ability to make organisational desirable judgements and decisions and better-informed action choices". Malmi and Brown (2008, p. 290) propose MCS as a package indicating that

those systems, rules, practices, values and other activities management put in place in order to direct employees behaviour should be called management controls. If there are complete systems, as opposed to a simple rule, then they should be called management control systems.

Simons (1995, p. 5) defines MCS as "the formal, information-based routines and procedures managers use to maintain or alter patterns in organisational activities". From a broader perspective, MCS can be categorised as formal and informal controls. Formal MCS are visible control systems, such as rules, standards operating procedures, and budgeting systems (Langfield-Smith, 1997). In contrast, informal controls are often derived from shared values and norms, or organisational culture, which include unwritten policies and cultural values (Ouchi, 1979). Both formal and informal control systems are essential for organisations to achieve their objectives.

Based on various definitions and perspectives, MCS literature has developed different types of frameworks and typologies, such as formal and informal controls (Anthony et al., 1989; Anthony and Govindarajan, 2001), market, bureaucracy and clan controls (Ouchi, 1977, 1979), administrative and social control (Hopwood, 1976), results, action and personnel controls (Merchant, 1985, 1998), input, output, and behavioural controls (Snell, 1992), accounting, behaviour and personal controls (Abernethy and Brownell, 1997), bureaucratic, charismatic, market, tradition, and collegial controls (Macintosh, 1994), bureaucratic, output, delegated and patriarchal controls (Whitely, 1999), result monitoring, cost control, bureaucratic controls, communications/integrative mechanisms, resource sharing, tightness of controls, professional controls, organisational culture and tailoring of controls to specific needs (Kober et al., 2003), levers of control (Simons, 1990, 1991, 1995, 2000), rudimentary, broad scope and traditional (narrow) controls (Gerdin, 2005), MCS as a package (Malmi and Brown, 2008), and performance management systems frameworks (Otley, 1999; Ferreira and Otley, 2009).

Over the years a number of management control techniques have been designed to support managerial decision making. For instance, these control techniques include, budgeting, investment appraisal, product/service costing, standard costing, life-cycle analysis, cost volume profit analysis, responsibility accounting, transfer pricing, and performance measurement systems. Nevertheless, the choice and use of control techniques not only varies between organisations, but also over time within the same organisation, and within the sub-units of the organisation (Abernethy and Stoelwinder, 1990; Cunningham, 1992). Moreover, the application and use of management accounting techniques will also vary depending on different contextual factors, such as strategy (Govindarajan and Gupta, 1985; Simons, 1987, 1995),

environment (Burns and Stalker, 1961; Khandwalla, 1972), and organisational structure (Bruns and Waterhouse, 1975). These variations might also be due to the different influences that impact management accounting applications (Scapens and Roberts, 1993).

2.5.2 Sustainability control systems

Emerging sustainability challenges have been compelling organisations to change the focus of conventional financial oriented management accounting applications to effectively support sustainability decision making (Gray et al., 1996; Schaltegger and Burritt, 2000; Burritt et al., 2002; IFAC, 2005; Masanet-Llodra, 2006; Ditillo and Lisi, 2014, 2016). Ball and Milne (2005, p. 324), for instance, emphasise that "new ideas and tools for management control … are essential in the context of a shift towards sustainability". Thus, there is a need to examine how organisations use management accounting practices in sustainability decision making. Over the years, while management accounting academics and practitioners have emphasised the importance of integrating MCS into the implementation of sustainability practices (e.g. Norris and O'Dwyer, 2004; Durden, 2008; CIMA, 2010; Schaltegger, 2011; Gond et al., 2012; Merchant, 2012; ACCA, 2013), in a recent study Ditillo and Lisi (2016, p. 2) outline that "only a limited consideration has been dedicated to the role of management controls in supporting sustainability within organisations". Moreover, integrating stakeholders' pressures for sustainability perspective, Schaltegger et al. (2003, p. 254) highlight that:

> there is an increasing pressure from stakeholders concerned about the impact of corporate activities on the environment, and the costs of environmental impacts have risen substantially … such pressures have led to emergence of various perceptions of the concept and practices of environmental accounting.

To address the emerging stakeholder demand for more information about the environmental impact of organisations, environmental accounting systems have been established. Schaltegger et al. (2003, p. 258) distinguish conventional and environmental accounting systems: "the main difference between conventional and environmental accounting systems is that the latter separately identify, measure, analyse and interpret information about the environment aspects of company activities".

Environmental Management Accounting (EMA) is a part of management accounting that aims to support environmental decision making by identifying, collecting, analysing and using financial and non-financial information about environmental aspects of companies in order to enhance corporate sustainability performance (IFAC, 1998; Bartolomeo et al., 2000; Schaltegger and Burritt, 2000; Burritt et al., 2002; Schaltegger et al., 2003; Henri and Journeault

2010; Schaltegger et al., 2013). EMA is defined as "the management of environmental and economic performance through the development and implementation of appropriate environmental related accounting systems and practices" (IFAC, 1998, p. 3). According to Schaltegger et al. (2003, p. 251), "environmental accounting provides monetary, physical and qualitative information to management about the environmental impacts of business and the financial consequences of environmentally relevant business activities− information that supports internal and external decision-making, reporting and accountability".

The MCS and sustainability interface is an emerging theme in the management accounting discipline (Berry et al., 2009; Schaltegger et al., 2013). As a specific application of MCS, sustainability control systems support organisations to formulate and implement sustainability strategy (e.g. Gond et al., 2010; Arjaliès and Mundy, 2013). Following prior studies (Gond et al., 2012; Ditillo and Lisi, 2014, 2016), this study refers to sustainability control systems as the extent to which organisations integrate environmental, social and economic sustainability elements within MCS. Exploring how organisations integrate sustainability control systems within traditional MCS, Ditillo and Lisi (2016) find that while the integration is influenced by managers' perceptions and attitudes towards sustainability, on the other hand, it is constrained by prevailing organisational structures and processes. Prior literature in EMA contributes to sustainable development efforts by examining the emergence of EMA (Bennett et al., 2011), environmental disclosure and reporting (Adams and McNicholas, 2007), environmental and economic performance (Henri and Journeault, 2010; Lisi, 2015), the role of accounting and changes in environmental agenda (Larrinaga-Gonzales and Bebbington, 2001), roadblocks to green and pleasant lands (Burritt, 2004), cleaner production (Burritt et al., 2009), environmental costs, eco-efficiency and decision making (Jasch, 2003, 2006; Burritt and Saka, 2006; Herzig et al., 2006, 2012), carbon management accounting (Burritt et al. 2010), use of cost management tools (e.g. Epstein and Wisner, 2001; Figge et al., 2002; Roth, 2008), the role of MCS in social responsibility decision making (e.g. Norris and O'Dwyer, 2004; Durden, 2008), EMA in Europe (Bartolomeo et al., 2000), how managers perceive stakeholders' influence on the choice of environmental performance indicators (Rodrigue et al., 2013), and the impact of eco-control package on environmental capabilities and performance (Journeault, 2016).

The extant literature proposes and classifies sustainability control systems tools for decision-making purposes under different headings and categories. Schaltegger et al. (2003) identify and analyse 46 sustainability accounting tools under three dimensions: (i)

environmental; (ii) social; and (iii) integrative accounting. Gond et al. (2012) categorise seven sustainability control systems tools that top managers use in corresponding to MCS: (i) sustainability planning; (ii) sustainability budgeting and environmental budgeting; (iii) environmental/material flow cost accounting and sustainable value added; (iv) environmental performance evaluation systems, and material and energy flow accounting systems; (v) sustainability performance measurement, and sustainability Balanced Scorecard; (vi) socio-eco-efficiency analysis, and environmental investment appraisal; and (vii) reward systems based on multidimensional performance systems. Arjaliès and Mundy (2013) refer to Simons' (1995) four levers of control framework to investigate the use of MCS in the formulation and implementation of corporate social responsibility strategy. Passetti et al. (2014) examine the frequency of use of sustainability accounting by proposing eight environmental tools: (i) environmental budget; (ii) environmental cost accounting; (iii) environmental life-cycle assessment; (iv) environmental performance indicators; (v) social budget; (vi) social performance indicators; (vii) eco-efficiency analysis; and (viii) sustainability reports. Their selection is based on three reasons: (i) relevance to the academic literature; (ii) usefulness to identify past, future, historical, and forecasted sustainability impacts and benefits; (iii) a balanced number of tools under each sustainability dimension (Passetti et al., 2014).

Schaltegger (2011) introduces the concept of 'sustainability management controls' based on the sustainability Balanced Scorecard that delineates how to use key performance indicators and related information in corporate sustainability. Sustainability management controls consist of five different variations: (i) finance-oriented; (ii) market-oriented; (iii) process-oriented; (iv) knowledge and learning oriented; and (v) non-market-oriented (Schaltegger, 2011). Roth (2008) explains how an organisation can use cost management tools, such as budgeting, variance analysis, Balanced Scorecard, life-cycle costing, and activity analysis in sustainability initiatives. Similarly, researchers (e.g. Epstein and Wisner, 2001; Figge et al., 2002) propose that MCS, such as planning, budgeting, cost accounting systems, performance measurement systems, Balanced Scorecard, socio-eco-efficiency analysis, and investment appraisal also have a significant role in addressing sustainability concerns. Crutzen et al. (2013) examine the extent to which large European organisations use planning, cybernetic controls, rewards, administrative controls and cultural controls to implement sustainability practices. Lueg and Radlach (2015) refer to the control package framework as proposed by Malmi and Brown (2008) to examine the role of MCS in sustainable development: cultural controls, planning, cybernetic controls, reward and compensation, and administrative controls. Lueg and Radlach (2015) reveal that while MCS are unable to address all the relevant aspects of sustainability

challenges, organisations give priority to managing smaller aspects of sustainable development, such as environmental responsibility. The study also finds that while the social aspect of sustainability has received less attention, organisations are more likely to use cybernetic control in sustainability management.

The growing awareness of the organisational impact of sustainability implications, particularly social and environmental impacts, has been influencing organisations to account for and manage MCS, such as performance measurement systems (e.g. Gray and Collison, 2002; Adams and Frost, 2008) and environmental performance indicators (Rodrigue et al., 2013). Gond et al. (2012) examined diagnostic and interactive uses of sustainability control systems in configuring sustainability into organisational strategies, and compared the traditional MCS with sustainability control systems. Schaltegger et al. (2013) argue that EMA is an emerging discipline, facing numerous challenges to establishment in the mainstream accounting and management accounting disciplines. Accordingly, a growing number of researchers call for more studies in MCS that contribute to sustainable development (e.g. Perego and Hartmann, 2009; Schaltegger and Burritt, 2010; Gond et al., 2012; Merchant, 2012; Arjaliès and Mundy, 2013; Bebbington and Thomson, 2013; Crutzen and Herzig, 2013; Schaltegger et al., 2013; Henri et al., 2014, 2015; Lueg and Radlach, 2015; Ditillo and Lisi, 2014, 2016; Lisi, 2015). This thesis aims to contribute to the MCS literature by investigating the use of sustainability control systems in proactive strategic responses to sustainability determinants.

2.5.3 Management control systems and organisational strategy

Johnson and Scholes (1997, p. 10) define strategy as "the *direction* and *scope* of an organisation over the *long-term*: which achieves *advantage* for the organisation through its configuration of *resources* within a changing *environment*, to meet the needs of *markets* and to fulfil *stakeholder* expectations". Depending on the nature of organisations, strategies can be categorised as corporate and business level strategies. Corporate level strategy determines the type of businesses that the organisation intends to operate (e.g. the diversification of business portfolios). Business level strategy is concerned with individual business units and their position within the industry and is focused on how to compete with rival businesses.[7]

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[7] Similarly, other strategy categories include, for instance, Miles and Snow's (1978) four types of business level strategies, namely prospector, defender, analyser, and reactor; and Porter's (1980, 1985) three generic strategies: cost leadership, differentiation, and focus strategy. Based on the nature of product innovation, Miller and Friesen (1982) describe organisations as conservative or entrepreneurial. Gupta and Govindarajan (1984) categorise variations of strategic missions in terms of build, hold, harvest, and divest.

The success of achieving organisational goals largely depends on how well strategies are formulated and implemented (Lord, 1996). First, strategy formulation involves planning of appropriate strategies in line with organisational objectives. Second, once strategies are formulated, the implementation process involves translating them into actions (Johnson and Scholes, 1997). The strategy implementation process consists of activities related to resource allocation, operationalisation, performance evaluation, and monitoring. The literature suggests that MCS should support the formulation and implementation of organisational strategy as a means of achieving sustainable competitive advantage (Simons, 1987, 1990, 1995, 2000; Dent, 1990; Lord, 1996; Langfield-Smith, 1997; Chenhall, 2003; Kober et al., 2003, 2007; Tucker and Parker, 2015). While traditionally the MCS and strategy relationship has been perceived as passive, meaning that MCS are the outcomes of organisational strategy, researchers also argue that MCS have an important role in formulating and implementing strategy (Hopwood, 1987; Macintosh, 1994; Lord, 1996; Kloot, 1997; Henri, 2006; Kober et al., 2007).

Prior studies in MCS have examined different aspects of strategy formulation and implementation: for instance, control systems and the level of competition (Khandwalla, 1972), controls and discretionary decision making (Merchant, 1985), strategy and cost control (Miller and Friesen, 1982; Dent, 1990), performance evaluation and reward systems (Govindarajan and Gupta, 1985; Simons, 1987), resource sharing and control systems (Ouchi, 1977; Govindarajan and Fisher, 1990), operational control systems and strategy (Daniel and Reitsperger, 1992), accounting controls and strategic change (Roberts, 1990; Knights and Willmott, 1993), the choice of interactive and diagnostic controls to manage strategy (e.g. Simons, 1987, 1990, 1991, 1994, 1995), strategic management accounting (Lord, 1996), changes in strategy and MCS (Kober et al., 2003), interrelationship between MCS and strategy (Kober et al., 2007), MCS and strategy relationship from the RBV perspective (Henri, 2006; Widener, 2006; Grafton et al., 2010), and MCS, strategy and not-for-profit organisations (Tucker and Parker, 2015).

Simons' (1995) levers of control framework has received considerable attention as a means of formulating and implementing organisational strategies. Simons (1994, 1995, 2000) proposes four levers of control to support the formulation and implementation of strategy: (i) belief systems; (ii) boundary systems; (iii) diagnostic control systems; and (iv) interactive control systems. Belief systems inspire employees through communication of core values and organisational mission. Boundary systems impose conditions, limits and rules within which employees are expected to perform their specific tasks and with which employees should comply. Diagnostic control systems monitor and evaluate performance, and motivate and

reward employees' accomplishments. Interactive controls facilitate creative dialogues and information sharing amongst top management and subordinates that promote organisational learning and dialogue. Simons (1991, 1995, 2000) notes that the uses of belief and interactive control systems reveal a positive connotation while the uses of boundary and diagnostic control systems indicate a negative connotation. Belief and interactive uses of MCS promote organisational opportunity seeking behaviour, while boundary and diagnostic uses of MCS emphasise compliance with pre-set standards. However, "the interplay of positive and negative forces create a dynamic tension between opportunistic innovation and predictable goal achievement that is necessary to stimulate and control profitable growth" (Simons, 2000, p. 301). Collectively, four levers of control create a positive dynamic tension on corporate performance and the maximum utilisation of controls is based on the simultaneous use of four levers of control together (Simons, 1995). Mundy (2010) suggests that when the controlling (boundary–diagnostic) and enabling (belief–interactive) roles of MCS are combined, it creates a positive dynamic tension, which produces strategic capabilities and competitive advantage. The levers of control framework has been widely used to examine the role of MCS in organisational capabilities, in particular, product innovation capabilities (e.g. Bisbe and Otley, 2004; Henri, 2006; Bisbe and Malagueño, 2015; Lopez-Valeiras et al., 2015).

Researchers argue that some MCS studies of strategic contingencies are limited in relation to narrowly focused outdated strategies (Chenhall, 2003), and extensive examination of single aspects of strategy (e.g. Ittner and Larcker, 1997; Langfield-Smith, 1997, 2007). Langfield-Smith (1997, p. 209) stresses that "the basic concepts and frameworks developed in the strategy literature during the past two decades have not been widely adopted in these [MCS] studies and the multidimensional nature of strategy is seldom recognised". Further, Langfield-Smith (1997) reiterates that the lack of attention of MCS to capture emerging strategies (e.g. sustainability strategies) might lead to under-specification and misspecification of research design and integrity of findings. Thus, the aim of this thesis is to investigate the use of sustainability control systems in facilitating the proactive strategic responses to institutional and RBV sustainability determinants.

2.6 SUSTAINABILITY CONTROL SYSTEMS AND PROACTIVE STRATEGIC RESPONSES TO SUSTAINABILITY DETERMINANTS

The role of MCS in addressing sustainability challenges has been increasingly recognised in the literature and practice. Rezaee and Szendi (2000, p. 124) propose that "global businesses have found it necessary to respond to emerging environmental issues by taking a more proactive

stance by embracing voluntary environmental initiatives". Epstein and Roy (2001, p. 593) propose that "the alignment of strategy, structure, and management systems are essential for companies to both coordinate activities and motivate employees towards implementing a sustainability strategy". Larrinaga-Gonzalez and Bebbington (2001, p. 277) indicate that "environmental management initiatives undertaken by the company required the accounting function to become more integrated with the environmental strategy". Essentially, generating sustainable competitive advantage needs a strategic alignment amongst unique organisational capabilities, and internal and external contextual circumstances (Wilden et al., 2013, Omar et al., 2015). Researchers also show that organisational inability to adopt balanced uses of MCS in line with external and internal organisational requirements is likely to generate negative consequences on operational performance (Mundy, 2010; Kruis et al., 2015). Kober et al. (2007, p. 427) highlight the importance of MCS in proactive strategic responses: "through interactions within the organisation and with its environment, the information generated by an accounting system could help facilitate strategic change in a proactive way".

The literature on the role of sustainability control systems in sustainability strategy can be categorised as a two way relationship: (i) the impact of sustainability strategy on the design of sustainability control systems; and (ii) the use of sustainability control systems in the implementation of sustainability strategy (cf. Henri, 2006; Kober et al., 2007). The current literature provides extensive empirical evidence on the influence of sustainability strategy on the design characteristics of sustainability control systems (e.g. Maxwell et al., 1997; Epstein and Roy, 2001; Epstein and Wisner, 2001;Van der Woerd and Van den Brink, 2004; Durden, 2008; Perego and Hartmann, 2009; Galbreath, 2010; Riccaboni and Leone, 2010; Ballou et al., 2012). For instance, Rodrigue et al. (2013) suggest that stakeholders' influence on environmental strategy impacts strategic performance measurement systems. Pondeville et al. (2013) find that while proactive environmental strategy tends to develop environmental MCS, on the other hand, organisations that perceive higher levels of ecological uncertainty are less likely to adopt proactive environmental strategy, environmental information systems, and formal environmental MCS. Consistent with Rodrigue et al. (2013), Pondeville et al. (2013) also find that stakeholders positively influence environmental proactivity, environmental strategy, and design of environmental MCS. Perego and Hartmann (2009) suggest that the increased quantification of environmental performance indicators and the sensitivity of managerial actions support the alignment between environmental strategy and performance measures.

While the majority of the current studies focus on the *design* characteristics of MCS in sustainability strategy, researchers have given scant attention to examining the *use* of sustainability control systems in proactive strategic responses to sustainability determinants. Referring to the levers of control framework, Gond et al. (2012) suggest that organisations can use sustainability control systems to integrate sustainability into strategy and, in turn, formulate and implement sustainability strategy. Gond et al. (2012) propose eight configurations that organisations can use as diagnostic and interactive control systems in sustainability strategy. Arjaliès and Mundy (2013) examine how organisations can use MCS to manage corporate social responsibility strategy. Their findings suggest that MCS have the potential to contribute to corporate social responsibility strategies in the form of innovation, communication, reporting, and identification of threats and opportunities that contribute to sustainable development. Rieckhof et al. (2015) argue that organisational commitment to use material flow cost accounting supported by levers of control help the formulation of resource efficient strategy. Kerr et al. (2015) explore how organisations integrate triple bottom line reporting within MCS in the implementation of social responsibility strategies. They reveal that such integrations would help to operationalise sustainability objectives, broaden and intensify stakeholder interactions, and enhance sustainability communication measures internally (Kerr et al., 2015). Building on an NRBV framework, Journeault (2016) finds that an eco-control package supports environmental capabilities and, in turn, environmental and economic performance.

However, these studies do not provide explicit evidence on the use of sustainability control systems to support proactive strategic responses to institutional and RBV sustainability determinants, and its consequences on corporate sustainability performance. More specifically, Ditillo and Lisi (2016, p. 36) conclude that "little is known about the control mechanisms set up by organisations in relation to their sustainability strategies and initiatives". This thesis examines the use of sustainability control systems in proactive strategic responses to sustainability determinants in (i) specifying and communicating sustainability objectives, (ii) monitoring sustainability performance, and (iii) using sustainability measurement, evaluation and rewarding systems (cf. Otley and Berry, 1980; Lindsay et al., 1996; Norris and O'Dwyer, 2004). The selection of this framework is suitable to provide a comprehensive view of MCS, and prior studies have been employed in the sustainability context (e.g. Lindsay et al., 1996; Norris and O'Dwyer, 2004)[8].

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[8] The thesis employs this framework in the case study presented in paper 1 (Case study) to explore whether and how organisations use MCS in proactive strategic responses to institutional pressures for sustainability. Simons' (1995) levers of control framework is employed in papers 2 and 3 (Survey-based studies) due to its relevance to

2.6.1 Specifying and communicating sustainability objectives

Proactive strategic responses to sustainability determinants require organisations to specify clearly and communicate sustainability objectives, policies, and plans internally and externally. Clear communication of sustainability objectives amongst stakeholders would help organisations to respond strategically to sustainably determinants effectively by minimising conflicts, risks, and misunderstandings about organisational operations and stakeholders' expectations. Organisations may use sustainability control systems such as internal sustainability operational structures and procedures, sustainability planning, and sustainability policies in order to specify and communicate sustainability objectives. Sustainability planning and policies may facilitate organisations to strategically predict future sustainability projects and practices on the analyses of the external and industry environments. For instance, McGuigan and Lord (2006, p. 136), examining environmental management systems to manage environmental sustainability, find that:

> The managerial commitment shown in this cooperative has resulted in the environmental policy permeating the entire organisation, appearing as far down as individual departments at manufacturing sites. The [environmental] policy has led to a number of environmental objectives being set in place, with managers reinforcing this with strong leadership, a structured reporting framework and a conscientious effort to educate both inside and outside users through environmental publications.

Arjaliès and Mundy (2013) indicate that organisations use belief systems to communicate corporate social responsibility core values amongst stakeholders. Organisations can use various documents, such as credos, mission statements, and statement of purpose to communicate core values to broader stakeholder groups (Simons, 1995). Belief systems also ensure that the employees' commitment towards common goals while motivating them to find new opportunities (Arjaliès and Mundy, 2013). Belief systems not only promote organisational stability and continuity, but also encourage managers to introduce new strategic priorities (Simons, 1995). Any MCS that facilitate the communication of organisational core values and purposes could be considered as belief systems (Arjaliès and Mundy, 2013). Organisations may use belief systems to communicate a sustainability commitment to employees and stakeholders within the long-term sustainability objectives indicated in a mission statement, and using corporate social responsibility strategic planning documents, organisational wide conferences, their intranet, posters, mission statements, and training sessions (Arjaliès and Mundy, 2013).

examine proactive sustainability strategies, sustainability dynamic capabilities and sustainable competitive advantage.

Arjaliès and Mundy (2013, p. 291) note the strategic implications of the use of belief systems to communicate corporate social responsibility core values: "formal communication of the purpose and values surrounding corporate social responsibility strategy is used by senior management to indicate to operational departments how these align with those of the general business strategy". Accordingly, this study proposes that the organisational ability to use sustainability control systems to specify and communicate sustainability core values can support proactive strategic responses to institutional and RBV sustainability determinants. Disseminating sustainability core values through vision and mission statements, holding company-wide conferences and forums, and the use of the intranet, websites, sustainability reports, corporate social responsibility reports, annual reports, and training programs may strengthen proactive sustainability strategies and dynamic capabilities by way of continuously positioning and emphasising commitment towards broader stakeholders.

2.6.2 Monitoring sustainability performance

Monitoring sustainability performance is a central task in proactive strategic responses to sustainability determinants, without which sustainability projects and practices would not be able to be completed within resource limitations. Organisations can use sustainability control systems, such as sustainability budgeting, material flow cost accounting, sustainability investment appraisals, sustainability life-cycle analysis, sustainability value added, socio-economic analysis, variance analysis, and environmental cost accounting to monitor sustainability operations and practices in line with organisational goals and objectives.

Budgeting is an important cost management tool to control resources, communicate objectives amongst all organisational layers, motivate managers to accomplish targets, assess managers' performance, demonstrate organisational performance, and show accountability (Covaleski et al., 2006). Passetti et al. (2014, p. 298) identify environmental budgeting as "a future-oriented planning tool which determines the funds available for environmental issues for the coming period". Organisations can use environmental and sustainability budgeting to emphasise sustainability commitment, allocate resources for sustainability projects, and specify sustainability goals and objectives by taking into account deviations from initial forecasts (Burrit and Schaltegger, 2001; Gray and Bebbington, 2001; Schaltegger et al., 2003; Roth, 2008). Roth (2008) proposes a sustainability-based triple-column budget to include social, environmental, and economic data instead of focusing on only the economic impact of the organisation. For instance, while the benefits that organisations generate for society include desirable products, employment, donations, and tax payments to the government, on the other

hand, society must bear the cost of depletion of non-renewable natural resources, negative consequences of unsafe products, industrial accidents, landfill costs, and public health problems (Roth, 2008). Thus a social budget particularly focuses on social aspects of sustainability (Schaltegger et al., 2003). Sustainability budgeting has the capacity to provide useful information in proactive strategic responses to institutional and RBV sustainability determinants.

ISO 14051: 2011 defines material flow cost accounting as a "tool for quantifying the flows and stocks of material in processes or production lines in both physical and monetary terms" (ISO, 2011, p. 15). Environmental and material flow cost accounting may assist strategic sustainability decision making by providing specific information that budgeting is not able to accommodate (Wagner and Enzler, 2006; Herzig et al., 2012). Rieckhof et al. (2015) suggest that the use of material flow cost accounting should be integrated into MCS to incorporate efficient and sustainable use of natural resources into strategy. Drawing on the levers of control framework, Rieckhof et al. (2015) propose a framework to integrate material flow cost into MCS in five stages, namely enabling, integrating, communicating, flow-thinking and learning, which ultimately lead to sustainable development through resource efficiency strategies. However, they stress that resource efficiency strategic goals can only be achieved if organisations are committed to sustainability targets on the strategic level, and transfer them into corporate levels using MCS. Wagner and Enzler (2006) suggest that material flow management applies not only within the organisation, but it also covers a broader spectrum of constituents, including supplier relationships in the entire value added chain, in a region, and a nation as well. Therefore, the use of material flow cost accounting would support proactive strategic responses to both institutional and RBV sustainability determinants.

Burritt et al. (2009) illustrate how organisations can use MCS to support environmental investment decisions. Drawing on a case study from a rice milling business, Burritt et al. (2009) suggest that monetary environmental investment appraisal techniques assist management to evaluate long-term sustainability projects effectively by minimising environmental and social impacts, and improving overall performance. The study also argues that environmental investment appraisal techniques are not only useful for organisations in environmental investment decisions, but can also be used to influence government to support policy decisions in the investment context (Burritt et al., 2009). This would essentially help organisations to support strategic responses to regulatory pressures. For instance, Burritt et al. (2009, p. 437)

propose that organisational ability to use monetary environmental investment appraisal techniques

> substantiate the usefulness of responsive regulation in CP-related [cleaner production] areas and encourage policy makers to design a balanced policy mix for environmental protection in the rice milling industry using the promotion of an EMA-based information strategy as a complement to command and control regulation.

Sustainability life-cycle analysis is an important cost management tool that organisations can use in proactive strategic responses to sustainability determinants in deciding when product design and production processes decisions are made. Sustainability life-cycle analysis is important as sustainability issues are associated with every aspect of operations, ranging from raw material acquisition to disposing of packaging and the used products (Gray and Bebbington, 2001; Rebitzer et al., 2004; Munasinghe et al., 2016). Life-cycle costing assesses the types of costs incurred during the life-cycle of a product, including acquisitions of materials, manufacturing process, distribution, usage, and finally the disposal of the product (Roth, 2008; Passetti et al., 2014; Munasinghe et al., 2016). Organisations committed to sustainability may analyse social and environmental costs, such as recycling cost, energy cost, and disposing cost in landfills in the life-cycle cost analysis (Roth, 2008; Passetti et al., 2014). The life-cycle analysis also forecasts environmental consequences in a timely manner and identifies precautions within and outside the organisation (Gray and Bebbington, 2001; Rebitzer et al., 2004). Such an analysis would generate a different cost structure with additional information that has strategic implications in the choice of product, production techniques, product integrity, and eventually waste management practices (Shrivastava and Scott, 1992).

Socio-eco-efficiency analysis proposed by Schmidt et al. (2004) provides a new approach to measuring the social aspects of sustainability by incorporating existing eco-efficiency analysis. The principles proposed by socio-eco-efficiency analysis also support organisations to assess social impact of products (Schmidt et al., 2004). Moreover, eco-efficiency analysis develops and enhances product features and operational processes by taking into account economic value added, use of natural resources, and organisational goals (Schaltegger et al., 2003; Henri and Journeault, 2009).

Figge and Hahn (2004) propose Sustainable Value Added, which is based on the paradigm of 'strong sustainability', as a monetary method of measuring organisational contributions to sustainability. Sustainable Value Added takes into account opportunity costs, whereas other approaches consider external costs incurred by environmental and social damage or based on the ratio of value creation and resource consumption (Figge and Hahn, 2004). In

particular, according to Figge and Hahn (2004, p. 173), Sustainable Value Added calculates "how much more value is created because a company is more efficient than a benchmark and because the resources are allocated to the company and not to the benchmark companies". By taking into account both (i) eco-social efficiency, and (ii) the absolute level of environmental and social resource usage (effectiveness), Sustainable Value Added simultaneously integrates three dimensions of sustainability (Figge and Hahn, 2004). Sustainable Value Added also provides a strong platform in proactive strategic responses to sustainability determinants as it provides information about how much an organisation has contributed to sustainability according to benchmarks (Figge and Hahn, 2004).

Environmental cost accounting records and measures both the direct and indirect environmental cost of the production cost of products and services (IFAC, 1998; Parker, 2000). The prior literature suggests that there are a number of environmental cost accounting tools that organisations use to plan, manage, and control sustainability related operations: variable costing, absorption costing, and activity-based costing methods (Schaltegger et al., 2003; Roth, 2008). For instance, Roth (2008) argues that the rationale underlying variance analysis can also be used in sustainability measurements. Schaltegger et al. (2003) suggest that different approaches to environmental cost accounting can also be classified as full-cost accounting, direct costing, or process costing. Research also suggests that cost accounting techniques, such as process-based costing, often referred to as activity-based costing (Schaltegger and Burritt, 2000), internal environmental accounting, flow cost accounting, flow-oriented environmental accounting, and environmental oriented process cost accounting can also be used in environmental cost accounting (Schaltegger et al., 2003). For instance, Schaltegger et al. (2003, p. 269) suggest that:

> one of the main advantages of using ABC [activity-based costing] to assess environmental costs-apart from the advantages concerning environmental full-cost accounting is the integration of environmental cost accounting into the strategic management process and its link to management objectives and activities.

Therefore, the use of environmental cost accounting tools has the potential to help organisations in their proactive strategic responses to sustainability determinants.

2.6.3 Sustainability performance measurement, evaluation and rewarding systems

Success of any sustainability initiative largely depends on the organisational ability to measure corporate sustainability performance (Epstein and Roy, 2001; McGuigan and Lord, 2006; Searcy, 2012; Epstein and Buhovac, 2014). Searcy (2012, p. 240) defines corporate

sustainability performance measurements as "a system of indicators, that provides a corporation with information needed to help in the short and long-term management, controlling, planning, and performance of the economic, environmental, and social activities undertaken by the corporation". Environmental performance indicators measure environmental issues and performance, such as water and energy consumption, waste management, greenhouse gas emissions, and links between organisations and the environment (Passetti et al., 2014). To evaluate the achievement of sustainability objectives as forecasted, organisations can use both financial and non-financial indicators, such as sustainability performance measurements (Gray and Bebbington, 2001; McGuigan and Lord, 2006; Schaltegger and Wagner, 2006; Henri and Journeault, 2008), and sustainability Balanced Scorecards (Figge et al., 2002; McGuigan and Lord, 2006).

Kaplan and Norton (1992) developed the Balanced Scorecard by considering four performance perspectives on which organisations need to focus for goal achievement: (i) financial; (ii) customer; (iii) internal business process; and (iv) learning and growth. The Balanced Scorecard has gained much attention in management accounting research as a performance measurement system (e.g. Lord et al., 2005). Organisations committed to sustainability may include social and environmental measurements in their Balanced Scorecard. The sustainability Balanced Scorecard has received considerable attention as a way of measuring sustainability performance (Figge et al., 2002; Schaltegger and Wagner, 2006; Dias-Sardinha et al., 2007; Länsiluoto and Järvenpää, 2008; Hubbard, 2009). Dias-Sardinha et al. (2007) coined the phrase 'triple bottom line value creation' for the financial perspective that includes financial, environmental and social elements for assessing sustainability performance. Epstein and Wisner (2001) include environmental and social sustainability indicators under all four perspectives of the Balanced Scorecard as a way of implementing sustainability strategy. This approach helps to align sustainability goals with organisations' strategic priorities (Roth, 2008). Organisational ability to integrate sustainability into the Balanced Scorecard also supports the simultaneous integration of environmental, social, and economic sustainability performance. For instance, reduction of energy consumption per unit would impact all three dimensions (Figge et al., 2002).

Organisations can also use reward systems based on multidimensional performance systems to evaluate individual's sustainability performance and achievements (Dutta and Lawson, 2009). Further, environmental performance evaluation systems (Dias-Sardinha et al., 2002), and material and energy flow accounting systems (Wagner and Enzler, 2006; Herzig et

al., 2012) can also be used to measure performance in non-financial terms. Ittner and Larcker (2003, p. 7) reveal that organisational failure to consider non-financial measures "denies them a comprehensive picture of their performance". Epstein and Buhovac (2014, p. 121) argue that "corporate incentive and reward systems can be a critical tool to implement sustainability and align the interest of the corporation, senior managers, and all employees". Epstein and Widener (2010) propose social, environmental, and economic measurement for multiple stakeholders' corporate social responsibility performance, and explain how to inform corporate social responsibility decision making. Social performance indicators particularly focus on social issues and performance, such as health, safety and wellbeing, equal access to opportunities, and social product assessments (Schaltegger et al., 2003). Bonacchi and Rinaldi (2007) propose a multidimensional and multilevel framework for planning and control of sustainability performance measures. Their framework consists of input, object, and output controls and environmental, social, and economic sustainability dimensions. While there is a growing body of literature to discuss the corporate sustainability performance measurement implications in different perspectives (Dias-Sardinha et al., 2002; Figge et al., 2002; Schaltegger and Wagner, 2006; Wagner and Enzler, 2006; Dutta and Lawson, 2009; Hubbard, 2009; Herzig et al., 2012), relatively little is known about how and to what extent organisations use these performance systems in proactive strategic responses to sustainability determinants. Nevertheless, measuring sustainability performance has always been a challenging task due to uncertainties associated with sustainability results and outcomes (Epstein and Widener, 2010).

2.7 CHAPTER SUMMARY

This chapter discussed the theoretical concepts and respective variables examined in the thesis. More specifically, it focused on institutional and RBV sustainability determinants and respective strategic responses, followed by the potential use of sustainability control systems in supporting proactive strategic responses. The theoretical and empirical literature discussed suggests that sustainability control systems have an important potential role to play in proactive strategic responses in terms of both institutional and RBV sustainability determinants. More specifically, organisations can use sustainability control systems in proactive strategic responses to sustainability determinants in (i) specifying and communicating sustainability objectives (e.g. belief systems), (ii) monitoring sustainability performance (e.g. sustainability budgeting, sustainability investment appraisals, sustainability life-cycle analysis, material flow cost accounting, sustainability value added, socio-economic analysis), and (iii) sustainability performance measurement, evaluation and rewarding systems (e.g. Sustainability Balanced Scorecard, reward systems).

Chapter 3 : RESEARCH DESIGN

3.1 INTRODUCTION

The purpose of this chapter is to discuss the research design of the thesis as a whole. It explains the reasons for using both qualitative and quantitative approaches to research, the philosophical paradigms in which the research is situated, and the choice of data collection methods. More specifically, while the individual empirical papers presented in Chapters 4, 5 and 6 discuss the research method specific to each paper, this chapter aims to provide an in-depth discussion of the overall research design supported by the relevant literature. This chapter is organised as follows: the next section introduces philosophical paradigms on which the thesis is based, and the types of research designs. Section 3.3 discusses the importance and relevance of selecting Sri Lanka as the research context to investigate sustainability management practices and use of sustainability control systems. Sections 3.4 explains the qualitative research design in terms of case study research design, contextual significance of the case study, data collection, and data analysis and interpretation. Section 3.5 discusses the quantitative research design of the survey-based studies. More specifically, the section elaborates the survey design approach and purpose, population definition and sample selection, data collection, and data analysis approach. The last section presents the chapter summary.

3.2 RESEARCH DESIGN

Defining the specific philosophical paradigm[9] in which the research is situated is important to position the researcher's standpoint. Each standpoint has its own intrinsic basic values, norms, views about the nature of reality and what establishes valid knowledge (Evered and Louis, 1981). Creswell (2014) proposes four different types of worldviews: (i) postpositivism; (ii) constructivism; (iii) transformative; and (iv) pragmatism. The postpositivist worldview represents the traditional and quantitative assumption of research (Creswell, 2014). Constructivism is often combined with interpretivism and is typically known as qualitative research (Creswell, 2014). According to Creswell (2014, p. 9), "a transformative worldview holds that research inquiry needs to be intertwined with politics and a political change agenda to confront social oppression at whatever levels it occurs". Creswell (2014) notes that "pragmatism as a worldview arises out of actions, situations and consequences rather than antecedent conditions (as in postpositivism)". As discussed later in this chapter, this thesis is

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[9] Similar terms include, worldviews (Creswell, 2014), paradigms (Lincoln et al., 2011), epistemologies and ontologies (Crotty, 1998), and in a broader term research methodologies.

situated within both the postpositivist and constructivist philosophical paradigms. Morgan and Smircich (1980) suggest that organisation theory better explains the research phenomenon if the researcher is more explicit about the nature of belief the researcher brings to the subject of study.

According to Creswell (2014, p. 12), "research designs are types of inquiry within qualitative, quantitative, and mixed methods approaches that provide specific direction for procedures in a research design". As shown in Table 3.1, Creswell (2014) proposes three types of alternative research designs: (i) quantitative; (ii) qualitative; and (iii) mixed methods.

TABLE 3.1 ALTERNATIVE RESEARCH DESIGNS

Quantitative	Qualitative	Mixed methods
Experimental design	Normative research	Convergent
Non-experimental design, such as surveys	Phenomenology	Explanatory sequential
	Grounded theory	Exploratory sequential
	Ethnographies	Transformative, embedded, or
	Case study	multiphase

Source: Creswell (2014, p. 12)

This thesis uses both quantitative and qualitative research designs based on the nature of the research questions investigated (Hopper and Powell, 1985). Hopper and Powell (1985) suggest that the epistemological choice should not be based on the superiority of a particular approach, rather, the researcher should think about the merit of the research question under investigation. More particularly, Hopper and Powell (1985, p. 429) note that "there is no such thing as a totally objective or value free investigation". Lillis and Mundy (2005) support the view that management accounting researchers need to consider different research approaches rather than relying on one approach. Balakrishnan (2012, p. 275) stress that "we do more harm than good when we elevate some research approaches or paradigms above others". In a recent review, Otley (2016, p. 01) comments that "the narrow view of contingency that relies on responses to generally applicable questionnaires needs to be replaced by a more tailored approach that takes into account the context of specific organisations". Therefore, based on the nature of the research questions under investigation, this thesis refers to both qualitative and quantitative research design approaches.

3.3 SRI LANKA AS A RESEARCH CONTEXT

This thesis studies the use of sustainability control systems in proactive strategic responses to sustainability determinants in Sri Lanka.[10] Sri Lanka was chosen as a research context for several conceptual and contextual reasons. More particularly, Sri Lanka as a research context to examine the use of MCS in strategic responses to institutional pressures for sustainability is noteworthy for several economic, environmental, and social reasons. In 2016, the World Bank categorised Sri Lanka as a Frontier Market. According to the World Bank (2016, p. 204), "frontier markets (FM) include, generally middle-income, countries that are usually smaller and less financially developed than emerging markets, and have more limited access to international capital markets". The United Nations Development Programme (UNDP, 2015) classified Sri Lanka as a 'High Human Development' country due to its higher levels of education (e.g. adult literacy rate 91%, expected years of schooling 13.7, mean years of schooling 10.8 in 2015), greater average life expectancy at birth (74.9 years in 2015), and higher standard of living (Human Development Index .757 in 2015). There is growing concern worldwide about unsustainable manufacturing practices in the developing country context, particularly those in Asia (Hart, 1995; Hart and Dowell, 2011).

Recent Sri Lankan history has seen the end of 30 years of civil war in 2009. After a number of referendums since 2009, the World Bank (2016, p. 141) stated that "the new Sri Lankan government [elected in 2015] has announced governance reforms that should strengthen democratic institutions". Recent researchers examining sustainability demonstrate that Sri Lanka provides a unique historical and cultural context to investigate sustainability practices. Thoradeniya et al. (2015, p. 1101) discuss the importance of Sri Lanka to the study of sustainability: "the uniqueness of Sri Lanka as the context … derives from the important role of Buddhism in environmental preservation, together with its historical perspectives shaped by culture and societal norms, environmental legislation and the adoption of international covenants and initiatives". Sustainability practices in Sri Lanka have been highly influenced by the predominant Buddhist philosophy of environmental conservation, appreciation of environment, and environmental values (Perry et al., 2015; Thoradeniya et al., 2015). For instance, Perry et al. (2015, p. 741) state that "ethical practices in Sri Lankan garment manufacturers are reinforced by culture norms, specially the moral teachings of the predominant religious persuasion of Sinhalese Buddhism, which demands fairness, social justice and equity". Furthermore, historical, archaeological, religious, and anthropological

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[10] Appendix A provides a summary of the country profile of Sri Lanka.

evidence provide a number of examples of how Sri Lanka has been practising sustainability (Thoradeniya et al., 2015).

Being an agricultural-based economy, traditionally Sri Lankans have followed sustainable farming practices, such as organic farming, use of environmentally friendly and efficient irrigation systems, and healthy food preservation systems. Notably, by 2014, 43% of the country's electricity was generated using hydropower (Ceylon Electricity Board, 2014). According to the World Bank (2012), 22% of the total land area in Sri Lanka is considered as terrestrial protected areas, which is a considerable percentage by comparison to other Asian countries, and much of the world. Perry et al. (2015, p. 741) also point out that Sri Lanka provides a suitable context to examine corporate social responsibility and sustainability practices as "Sri Lanka's government directives, labour union histories and societal norms provide a strong foundation on which to build corporate social responsibility progress with retail buyers". In addition, Perry et al. (2015, pp. 741-742) suggest that Sri Lanka provides an "extreme case" location to examine sustainability practices in the apparel manufacturing industry as "Sri Lanka's government directives, labour union histories and societal norms provide a strong foundation on which to build corporate social responsibility progress with retail buyers". Similarly, Beddewela and Fairbrass (2015, p. 2) highlight that "Sri Lanka provides a particularly revealing context in which to study interactions between MNEs, the state and other institutions, in relation to the former's legitimacy seeking behaviour".

While Sri Lankan society and cultural values support sustainability practices, relatively little is known about how profit-oriented corporate entities practise sustainability (e.g. Beddewela and Fairbrass, 2015; Perry et al., 2015; Thoradeniya et al., 2015). The extant literature provides some evidence on sustainability reporting (Abeysekera and Guthrie, 2005; Beddewela and Herzig, 2013; Thoradeniya et al., 2015) and corporate social responsibility practice (Fernando, 2007; Beddewela and Fairbrass, 2015; Perry et al., 2015). For instance, Beddewela and Fairbrass (2015) explore how multinational enterprises operating in Sri Lanka use corporate social responsibility practices in proactively seeking legitimacy in response to institutional pressures. In a recent study, using life-cycle analysis, Munasinghe et al. (2016) examine the carbon and energy footprint of garments manufactured in Sri Lanka. From an eco-control approach, Gunarathne and Lee (2015) examine the use of EMA in the hotel sector in Sri Lanka. They find that the hotel industry uses EMA as a cost saving approach when faced with financial difficulties. While there is growing interest in examining the use of EMA applications in the Sri Lankan context, the current literature does not provide sufficient evidence

on whether, how and to what extent organisations use sustainability control systems in proactive strategic responses to sustainability determinants, and its performance consequences. More specifically, besides its predominant Buddhist culture, unique environmental preservation practices, future economic forecasts, and rapidly changing social context, the lack of MCS studies in sustainability management in Sri Lanka provides a rich context to examine the use of MCS in strategic responses to institutional pressures for sustainability.

3.4 QUALITATIVE RESEARCH DESIGN

Paper one uses a qualitative research approach to examine the use of sustainability control systems in proactive strategic responses to institutional pressures for sustainability. Creswell (2014, p. 4) defines that the qualitative "process of research involves emerging questions and procedures, data typically collected in the participant's setting, data analysis inductively building from particulars to general themes, and the researcher making interpretations of the meaning of the data". Studies following a qualitative approach reflect an interpretivist paradigm (Guba and Lincoln, 1994; Lincoln et al., 2011) or a constructivist paradigm (Creswell, 2014). A constructivist paradigm assumes that knowledge creation is subjective, human beings determine social reality, and knowledge is value laden (Lincoln and Guba, 1985; Creswell, 2014). Burrell and Morgan (1979, p. 28) note that "the interpretive paradigm is informed by a concern to understand the world as it is, to understand the fundamental nature of the world at the level of subjective experience. It seeks explanation within the realm of individual consciousness of subjectivity, within the frame of reference of the participant as opposed to the observer of action". According to Morgan and Smircich (1980), the interpretivist paradigm reflects reality as a social construction, human as social constructors, and epistemological position being to comprehend how social truth is created.

Accounting research from an interpretive perspective is considered "as one form of symbol that is used in the social construction of a fluid, subjective reality" (Covaleski and Dirsmith, 1990, p. 543). Research conducted using this method supports explaining, translating, investigating, and concluding the significance of actions happening in the social world (Covaleski and Dirsmith, 1990). Baxter and Chua (2006, p. 47) claim that:

> The field of management accounting practice is a socially constructed one. It is through interactions embedded in ongoing organisational processes that highly situated and local meanings are attributed to management accounting technologies by those social actors connected to them. This approach stems from an 'interpretive' philosophy of the

production of knowledge and does not ascribe to the objective nature of reality as postulated by a positivist perspective.

Qualitative interpretive studies reveal some specific characteristics, including events occurring in the natural context, in an organisation, or in the field, facts and ideas generated from the respondents' perceptions and experiences, and reflexivity in the research design, data collection, and analysis (Bluhm et al., 2011). Miles and Huberman (1984) note that qualitative research helps the researcher to gain a holistic understanding of the study, and facilitates the capturing of the meaning of participants through long and in-depth involvement and contact. The strengths of qualitative research include (i) the ability to deal with a variety of evidence such as secondary documents, artefacts, interviews, and direct observations (Yin, 2009), (ii) flexibility of data collection and analysis (Bluhm et al., 2011), (iii) understanding deeper insights from individuals, groups, and entities and analysing their evolution over time (Bluhm et al., 2011), (iv) the ability to reveal individuals' experience and how they interpret their experience, in terms of meanings and language reflected and attached to actions and events (Covaleski and Dirsmith, 1990; Bluhm et al., 2011), and (v) the flexibility of research questions that do not explicitly indicate the specific data required to answer the question (Richards, 2014). Nevertheless, qualitative research also has some limitations, including being time consuming and subject to multiple interpretations in studies where a number of researchers are involved (Covaleski and Dirsmith, 1990), lacking in rigour, difficulties associated with replication in other contexts, and personal bias towards the interpretation of findings and validity of results (Ahrens and Chapman, 2006; Yin, 2009).

3.4.1 Case study research design

The study employed a case study method that allows a holistic investigation on the use of sustainability control systems in proactive strategic responses to institutional pressures for sustainability. According to Creswell (2014, p. 43), "case studies are a design of inquiry found in many fields, especially evaluation, in which the researcher develops an in-depth analysis of a case, often a program, event, activity, process, or one or more individuals". Case studies provide a specific platform to examine the 'how' and 'why' in contemporary research phenomena within a real life context (Yin, 2009; Lincoln, 2010; Silverman, 2013). Further, case studies are suited to in-depth explanatory investigations in a specific organisation in obtaining research evidence from different sources (e.g. McKinnon, 1988; Scapens, 1990; Ferreira and Merchant, 1992; Yin, 2009).

While Covaleski and Dirsmith (1990) suggest that qualitative field studies provide a suitable approach to examining the institutional process and context, Lawrence et al. (2009) detail that case studies best facilitate making visible how institutions work. For instance, prior studies in this strand of literature have used case studies to examine how and why sustainability control systems vary in relation to organisational sustainability initiatives (Ditillo and Lisi, 2016), motivations for corporate social responsibility by subsidiaries of multinational enterprises operating in emerging economies (Momin and Parker, 2013), and use of corporate social responsibility practices in strategic responses to institutional pressures as a means of seeking legitimacy (Beddewela and Fairbrass, 2015). Studies based on a qualitative approach aim to explore and understand the meaning given by individuals or groups to a particular social or human problem. Therefore, this approach is particularly important for examining (i) what forms of institutional pressures (i.e., coercive, mimetic, and normative) can influence an organisation to adopt sustainability, (ii) how organisation respond (e.g., acquiescence, compromise, avoidance, defiance, and manipulation) to institutional pressures for sustainability and (iii) the role of sustainability control systems in supporting proactive strategic responses to institutional pressures for sustainability?

In particular, as the use of sustainability control systems in sustainability management is still in the emerging stage in the literature, the case study method is more suitable to explore and establish the concept when compared to other research methods (Adams and Larrinaga-Gonzalez, 2007; Ditillo and Lisi, 2016). For instance, Adams and Larrinaga-Gonzalez (2007, p. 339) emphasise the need for researchers in social and environmental accounting to use more engaging methodologies in sustainability accounting with the "aim of drawing from the field the rationales that the actors use to construct sustainability accounting and accountability and, directly or indirectly, enhancing practice". As mentioned above, the case study method is suitable to achieve the objectives in this study as interpretive studies are "fat with the juice of human endeavour, human decision making, *zaftig* with human contradiction, human emotion, human frailty" (Lincoln, 2010, p. 6). While the majority of existing empirical studies that examine the design characteristics of MCS have employed case studies (e.g. Durden, 2008; Morsing and Oswald, 2009; Riccaboni and Leone, 2010; Rodrigue et al., 2013), less focus has been given to exploring the use of sustainability control systems in sustainability management using case study methods.

3.4.2 Contextual significance of the case study

The case study was undertaken in the apparel manufacturing industry. The apparel manufacturing industry is primarily based in low wage countries in Asia and Latin America with widespread supply chains across continents. The apparel manufacturing industry in the Asian context is a highly suitable context for examining sustainability implications that have wide variety of implications. The case study was conducted in a privately-owned large-scale apparel manufacturing organisation, with its headquarters in Colombo, Sri Lanka. Recent empirical evidence supports the choice of the Sri Lankan apparel manufacturing industry as a suitable context to examine sustainability implications (Beddewela and Fairbrass, 2015; Perry et al., 2015; Munasinghe et al., 2016). The organisation was selected by considering industry conditions, sustainability practices, and the organisation's outstanding public image and commitment towards sustainability when compared to similar types of organisations in the industry (cf. Scapens, 1990; Ferreira and Merchant, 1992). Special care was taken to select an organisation that would provide sufficient resources and evidence for the research theme in order to ensure the validity of findings (McKinnon, 1988; Durden, 2008). Prior research reveals that larger and more visible organisations are highly inclined and influenced to implement sustainability practices, with formal and tight management control practices when compared to smaller firms (González-Benito and González-Benito, 2006; Henri and Journeault, 2010; Brammer et al., 2012; Pondeville et al., 2013; Lisi, 2015). Corporate philosophy, resource availability, local and global appearance, and legal requirements may also impact sustainability initiatives in large organisations.

Spradley (1980) suggests that focusing on a single social situation enables a better understanding of the complexities associated with a broader social situation. Moreover, an in-depth examination of a single case organisation allows the researcher to reveal novel theoretical insights and to re-assess previous theories (Dyer and Wilkins, 1991). Dyer and Wilkins (1991, p. 615) note that the purpose of a single case study is to find the "deep structure of social behaviour". Dyer and Wilkins (1991, p. 615) also argue that the theoretical propositions generated through an in-depth case study would be more accurate as such an approach considers the "intricacies and qualification of a particular context".

3.4.3 Data collection

Using data triangulation (McKinnon, 1988; Scapens, 1990; Ferreira and Merchant, 1992; Yin, 2009), the study collected data from multiple sources, such as semi-structured interviews,

internal and publicly available documents, face to face conversations, and manufacturing plant observations. Qu and Dumay (2011, p. 241) note that "the interview process is an opportunity to explore the meaning of the research topic for the respondent and a site to be examined for the construction of a situated account". In particular, use of semi-structured interviews is important "to understand the complex behaviour of members of society without imposing any *a priori* categorisation that may limit the field of inquiry" (Fontana and Frey, 1994, p. 366). Semi-structured interviews are used in case studies because of their potential to focus attention, be conversational and flexible, provide accessible and intangible insights, and explore new questions and hidden ideas in human and organisational behaviour (Qu and Dumay, 2011; Rodrigue et al., 2013).

The researcher directly approached the case organisation by explaining the research aim and objectives, and the organisation's contextual relevance to an examination of the proposed theme. Initial access was granted by one of the three divisions' environmental sustainability team and the other two divisions joined later. The researcher did not have any personal or professional relationships with the case organisation. Gaining access to the research site without personal relationships reduces personal bias towards the outcomes, thus enhancing the reliability and validity of outcomes (McKinnon, 1988).

The researcher presented himself as a doctoral student from Macquarie University, examining the use of MCS in sustainability management. The researcher's presentation plays an important role as it impacts the success or failure of the research (Fontana and Frey, 1994). This is also important to build the trust of participants as the researcher meets them for the first time. To establish a rapport, the researcher commenced the interviews with a general discussion related to sustainability practices and participants' career involvement.

As I adhered to the University's ethics requirements (See Appendix B for ethics approval by the Macquarie University Human Research Ethics Committee), participants responded freely. This is one of the advantages of semi-structured interviews that enable participants to express their thoughts and perceptions in their own terms and language (Qu and Dumay, 2011). The researcher interviewed 15 senior, middle and junior level managers until the data saturation level was reached. At this level the researcher felt that no significant new data or insights would be revealed. Subject to data saturation, these 15 interviews provide sufficient information to interpret and address the research questions examined in this study (Silverman, 2013). Out of the 15 total interviews 12 interviews were audio recorded, and three participants did not grant

permission for audio recording. Detailed notes of non-recorded interviews were taken to verify the record of data (McKinnon, 1988). Interview transcripts of the non-audio recorded interviews were sent to respective participants for checking and verification. Except for one interview, the interviews were conducted in English. The interview that was conducted in the Sinhalese language, which is one of the two national languages in Sri Lanka, was translated by the researcher, a native Sinhalese speaker and was verified by a native Sinhalese speaking PhD graduate in social sciences.

The study employed a sampling process to select potential respondents for interviews (McKinnon, 1988; Silverman, 2013). The sampling criteria included (i) senior and middle level managers whose job involvement directly relates to sustainability management, (ii) representing three major divisions in the organisation, and (iii) with at least two to three years of experience in the organisation. The contact persons of each division introduced the most relevant respondents at the division. Further interviews were carried out through snowballing, requesting the prior participants to recommend the most important and relevant people within their section. Ten participants were senior and middle level sustainability managers of divisional head offices while the remaining five participants represent senior and middle level sustainability managers from manufacturing plants. Gender representation of participants includes four females and 11 males. Participants' divisional representation consists of nine participants from division one, four participants from division two, and two participants from division three. Interviews were conducted in the corporate head office, two divisional head offices, and three manufacturing plants, representing all three divisions of the organisation (Participants' details are presented in Table 4.1 in Chapter 4).

The interview guide encompasses four key themes that are the basis of the research issues investigated in the study (cf. Dillard and Reilly, 1988; Qu and Dumay, 2011): institutional pressures for sustainability, proactive strategic responses, use of MCS in the implementation of sustainability practices, and use of sustainability control systems in proactive strategic responses to institutional pressures for sustainability (See Appendixes C and D for interview guide used in the study and information and consent form, respectively). Qu and Dumay (2011, p. 246) indicate that semi-structured interviews "involve prepared questioning guided by identified themes in a consistent and systematic manner interposed with probes designed to elicit more elaborate responses". While key themes were prepared in advance, the researcher attempted to remain open to different, new, unanticipated, and even opposite views, and did not impose and emphasise these themes and categories with the interviewees (Qu and Dumay,

2011). Some questions were customised and raised a number of further probing questions according to the roles and responsibilities of the participants, but remained within the central theme in the study.

3.4.4 Data analysis and interpretation

The study employs NVivo 10 qualitative data analysis software for coding and analysing data. Interview transcripts and secondary documents were analysed by referring to the categorisation and analysis of emergent themes and concepts (Miles and Huberman, 1984), and the constant comparison method to identify common patterns and themes. Data analysis and interpretation procedures are discussed in detail in Chapter 4.

3.5 QUANTITATIVE RESEARCH DESIGN

After exploring whether and how organisations use sustainability control systems in strategic responses to institutional pressures for sustainability, two mail survey-based studies were designed to further investigate the extent to which organisations use sustainability control systems in proactive strategic responses to RBV sustainability determinants. The research design of these two studies is based on the postpositivist paradigm, and employs a quantitative research approach. Researchers following the postpositivist paradigm attempt to test, verify, and refine laws or theories that govern the world (Creswell, 2014). The research procedure in this paradigm begins with a theory, then collects data to test or refine the theory, propose required revisions, and carry out additional assessments (Creswell, 2014). Some of the assumptions under this approach include, for instance, that knowledge is hypothetical, theories are tested using quantitative research, data, evidence, and rational reflection to improve knowledge, and the understanding of relationships amongst variables is enhanced when referred to in the form of questions and hypotheses (Phillips and Burbules, 2000; Creswell, 2014).

Creswell (2014, p. 4) defines quantitative research as "an approach for testing objective theories by examining the relationship amongst variables. These variables, in turn, can be measured, typically on instruments, so that numbered data can be analysed using statistical procedures". Luft and Shields (2014, p. 551) note that "the term 'positivist' has been used loosely in accounting research, as in other contemporary social science research, often to denote quantitative hypothesis-testing research". More specifically, these two surveys examine: (i) the mediating impact of sustainability control systems on the relationship between proactive sustainability strategies and corporate sustainability performance; and (ii) the moderating

impact of sustainability control systems on the relationship between sustainability innovation capabilities and sustainable competitive advantage. Thus, these two survey-based studies use prior theoretical frameworks and tested concepts to develop and test the proposed hypotheses using empirical data.

As discussed in Chapter 2, the prior literature provides empirical evidence to support that the main concepts examined in these two survey-based studies have been operationalised, and therefore, can be regarded as tested concepts. More particularly, they are developed drawing on well-established theoretical and conceptual frameworks: the RBV of the firm (Barney, 1991); the NRBV of the firm (Hart, 1995); dynamic capabilities (Teece et al., 1997); and levers of control (Simons, 1995). These theories and concepts have been tested not only in management accounting (e.g. Henri, 2006; Widener, 2006; Grafton et al., 2010), but also in the general and strategic management (Bansal, 2005; Chan, 2005) and education (Bobe and Kober, 2015) disciplines. However, this thesis's focus is to examine these theories and concepts in the emerging sustainability management and MCS literature, which has received relatively less attention in the contemporary literature. Van der Stede et al. (2007) find that the majority of management accounting research has been designed to test theories instead of building theory. Thus, because they refer to well-established and tested theoretical concepts and variables, it can be proposed that the two survey-based studies examined in this thesis are positioned within the postpositivist paradigm (Creswell, 2014).

3.5.1 The survey design

The study referred to Dillman's (2000) survey design approach in general, and a survey research design framework proposed by Van der Stede et al. (2005, 2007) to design survey-based management accounting research in particularly. Van der Stede et al.'s (2005, p. 657) analytical framework consists of five categories: "(1) purpose and design of the survey, (2) population definition and sampling, (3) survey questions and other research method issues, (4) accuracy of data entry, (5) and disclosure and reporting". While this section discusses most of the components related to these categories, some aspects are also integrated in the two survey-based papers presented in Chapters 5 and 6.

3.5.2 Purpose and design of the survey

A survey method is suitable for this study as it "provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population"

(Creswell, 2014, p. 13). Van der Stede et al. (2007) note that the purpose of a survey could be either description or explanation. Surveys focused on descriptive studies tend to discover characteristics in an interested population. However, explanatory surveys are employed to examine the "relationships amongst management accounting (and other) variables guided by theoretical explanations about how and why these variables should be related" (Van der Stede et al. 2007, p. 461). Two survey-based studies in this thesis examine the extent to which sustainability control systems moderate and mediate the relationship between proactive sustainability strategies and sustainability dynamic capabilities and corporate sustainability performance. As per Van der Stede et al.'s (2005, 2007) suggestion, the purpose of the survey in this thesis is explanatory.

Van der Stede et al. (2005, 2007) note that, depending on the purpose of the research, studies using a survey method are designed to collect cross-sectional or longitudinal data. A cross-sectional survey collects data by investigating the impact of both independent and dependent variables at a given point of time. Conversely, "longitudinal surveys require either repeated surveys over time or one-time surveys that ask respondents about measurements over time" (Van der Stede et al. 2007, p. 461). This thesis design uses a single cross-sectional survey to collect data for both studies. Several factors motivate the use of a cross-sectional survey in these two studies: (i) as the survey was distributed amongst the senior managers in large-scale organisations, including CEOs, managing directors, general managers, CFOs etc., repeated surveys or a number of repeated questions in a single survey would not be viable due to respondents' availability and time commitment; (ii) the survey was distributed in Sri Lanka; and (iii) as presented in the earlier section in this chapter, the research also included a field study to explore the proposition under investigation from an institutional perspective.

Proper survey design involves determining the level of analysis, including industry, organisation, and individuals (Van der Stede et al., 2005, 2007). As indicated above, the focus of this thesis is to examine the use of sustainability control systems in proactive strategic responses to institutional and RBV sustainability determinants. Therefore, to capture the sustainability implications in this context the most appropriate level is organisation level. But Van der Stede et al. (2007) comment that if a study's focus is beyond the individual level, researchers should attempt to collect data from multiple respondents in each level. However, the survey in this study was distributed only to one member of top management in each organisation. The survey was designed in English as the target participants are competent in English. While Sinhalese and Tamil are the national languages in Sri Lanka, the language of

industry is English. In particular, all the managerial level corporate documents and financial reports in large companies are produced in English.

3.5.3 Population definition and sampling

Van der Stede et al. (2005, 2007) suggest that the population should be clearly identified to enable choice of a sample that represents the population of interest. The target population in these two studies include both local-multinational, manufacturing-services, and listed and non-listed organisations. This study selected the population from organisations listed on the Colombo Stock Exchange, the Ceylon Chamber of Commerce, the National Chamber of Commerce Sri Lanka, the International Chamber of Commerce Sri Lanka, and the Board of Investments Sri Lanka. The study selected the sample by considering the generalisability of findings, the size of the organisations, and whether the organisation was engaging in sustainability-related practices. Pondeville et al. (2013) considered Belgian manufacturing organisations with 20 employees as large-scale organisations when examining implementation of MCS and environmental management practices. Thoradeniya et al. (2015) surveyed 959 organisations with more than 50 employees to investigate managers' attitudes to sustainability reporting in Sri Lanka. Accordingly, the survey was distributed amongst 700 organisations that employ more than 50 employees. Similarly,

With the aim of increasing the response rate and ensuring accuracy, the surveys were distributed using both online and paper-based mail delivery modes. Macquarie University's official online survey distribution software *Qualtrics* was used to distribute online surveys. Respondents' official email addresses were collected from the organisation's website. Paper-based surveys were delivered to respondents' official corporate address together with a cover letter, a survey, and a stamped return envelope, and a postcard. As a way of enhancing the response rate, respondents were also asked to indicate if they wished to receive a summary of the results. The cover letter briefly explained the purpose of the survey and indicated that the survey was approved by Macquarie University's Human Research Ethics Committee (See Appendixes E and F for survey instruments and ethics approvals, respectively). At two and four weeks after initial distribution, reminder letters and emails were sent to respondents who had not responded to the survey.

Table 3.2 provides the numbers and percentage of distributed and received usable online and postal surveys. Depending on the access and availability of the email addresses, the study distributed 260 online and 440 paper-based surveys, out of which 82 online and 93 paper-based

usable surveys were received, respectively. It should be noted that organisations were only sent either online or paper based surveys. The final response rate is 25%. Twenty-seven surveys were eliminated due to incomplete responses. Van der Stede et al. (2005, 2007) find that the mean and median sample size for survey-based empirical management accounting research is 239 and 125, respectively. Finally, given the final usable surveys of 175, with 25% response rate, this study is consistent with similar MCS studies (Henri, 2006).

TABLE 3.2 SURVEY SAMPLE AND RESPONSE

Nature of survey	Online			Postal			Total	%
	Number	% of sent	% of received	Number	% of sent	% of received		
Sample size	260	37.14	-	440	62.85	-	700	100.00
Early received	62	23.84	56.88	47	10.68	43.12	109	62.28
Late received	20	7.69	30.30	46	10.45	69.70	66	37.72
Total	82	31.53	46.85	93	21.13	53.14	175	25.00

3.5.4 Data analysis approach

The thesis employs the Partial Least Squares (PLS) data analysis approach. Wold (1985) developed the PLS as a means of estimating path models with latent constructs to indirectly measure using multiple indicators. PLS analysis has gained much attention due to its ability to avert several limitations in covariance-based structural equation modelling (SEM) in terms of distributional properties, measurement level, sample size, model complexity, and factor indeterminacy (Chin, 1998; Wetzels et al., 2009). In particular, PLS is particularly applicable to this study to examine mediating (paper 2) and moderating (paper 3) effects using second-order hierarchical constructs by taking into account the measurement errors that decrease the estimated relationships. The PLS consists of two models: (i) a measurement model (outer model) that examines the relationship between latent variables and associated manifest variables; (ii) a structural model (inner model) that examines the relationships between latent variables (Chin, 1998). PLS ensures robust solutions in estimating relationships amongst variables (Chin, 2010). Due to the partial nature of the estimation procedure, PLS best facilitates analysis with small sample sizes when compared to covariance-based modelling, which requires a larger number of observations relative to the number of constructs (Chin, 1998). While there are a number of software programs for PLS analysis, SmartPLS 3.0 was employed due to its flexibility and availability of modern analytical tools to test the proposed hypotheses.

These two studies employed a confirmatory factor analysis by adapting previously tested and theoretically derived instruments (e.g. Weerawardena, 2003; Bansal, 2005; Henri, 2006; Widener, 2007; Arjaliès and Mundy, 2013). This approach follows Sarros et al.'s (2005, p. 165)

suggestion that "specific theoretical relationships amongst observed indicator items can be identified and tested using CFA [confirmatory factor analysis] to produce composite factors". Schriesheim et al. (1993) proposed that CFA helps to enhance the rigour of content and construct validity. Therefore, employing the CFA approach using SmartPLS is appropriate in the two survey-based studies.

3.6 CHAPTER SUMMARY

This chapter discussed the research design in the thesis as a whole. The chapter first introduced the types of research design and the rationale for choosing a particular research design, together with philosophical paradigms. Second, the importance and relevance of selecting Sri Lanka as a research context was discussed. The discussion next moved to the research design of the case study and the data collection process using semi-structured interviews. Fourth, the chapter explained the positivist paradigm on which the two survey-based studies were developed. The chapter closes by explaining the research design of the survey-based studies, including survey design, sample and data collection, and the data analysis approach. Details of the data analysis and interpretation sections are integrated into the individual empirical papers presented in Chapters 4, 5, and 6.

Chapter 4 : PAPER ONE

STRATEGIC RESPONSES TO INSTITUTIONAL PRESSURES FOR SUSTAINABILITY: THE ROLE OF SUSTAINABILITY CONTROL SYSTEMS*

ABSTRACT

This case study examines the role of sustainability control systems in strategically responding to institutional pressures for sustainability. Drawing on institutional theory (DiMaggio and Powell, 1983) and strategic responses to institutional pressures typology (Oliver, 1991), the study argues that organisations strategically respond to institutional pressures for sustainability using sustainability control systems. Data were collected by interviewing sustainability managers of a large-scale multinational apparel manufacturing organisation with its headquarters in Sri Lanka. The study finds that organisations actively respond to institutional pressures for sustainability using acquiescence, compromise, avoidance, defiance, and manipulation strategies. The results not only reveal that sustainability control systems (i.e., sustainability budgeting, sustainability key performance indicators, sustainability life-cycle assessment) play a critical role in complying with institutional pressures for sustainability, but also in more proactive strategic responses, including compromise, avoidance, defiance, and manipulation. The findings conclude that organisations use sustainability control systems as a medium to respond strategically to institutional pressures for sustainability.

Keywords: Institutional pressures; Sustainability; Strategic responses; Sustainability control systems

4.1. INTRODUCTION

A key challenge faced by organisations in today's rapidly changing environment is to design and implement management practices that capture mounting institutional pressures for sustainability from multiple stakeholders, such as customers, suppliers, regulators, non-governmental organisations, and others (Bansal and Roth, 2000; Bebbington and Thomson, 2013; Bebbington and Larrinaga, 2014; Baker and Schaltegger, 2015).[11] These stakeholders put enormous pressures on organisations to pursue high standards of environmental and social responsibility—whether it is to reduce their carbon footprint, mitigate their impact on land degradation, prevent abusive labour practices, improve workplace health and safety conditions, or comply with human rights standards. If not addressed in an appropriate and timely manner, these issues could result in critical financial, physical and reputational risks. For instance, in 2013, the collapse of a garment factory in Bangladesh caused 1,134 deaths and over 1,650 injuries. This catastrophic collapse and several other tragedies of this nature raised serious concerns about unsustainable management practices in many organisations, particularly in developing country. The way organisations should respond to these institutional pressures for sustainability has therefore become a major determinant factor of the effectiveness of addressing sustainability challenges and gaining social legitimacy.

Despite the fact that sustainability practices in many organisations are driven by how they respond to institutional pressures for sustainability, a small but growing body of literature reveals factors that intrinsically motivate organisations to engage in sustainability. For instance, sustainable entrepreneurship and sustainability innovation are two such internal factors that motivate organisations to engage in sustainability (Schaltegger and Wagner, 2011). However, this study seeks to contribute to the strand of literature concerning how organisations should respond to institutional pressures for sustainability, as such responses have not only critical consequences for organisational improvements but also gaining social legitimacy.

To understand how organisations should respond to institutional pressures for sustainability, this study utilises the theoretical constructs of institutional theory (DiMaggio and

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[11] Gray (2010, 53) defines "sustainability to be a state" and "sustainable development to be a process through which we move towards (or perhaps away from) that state". Sustainable development essentially requires the simultaneous integration of environmental integrity, social equity and economic prosperity principles (Bansal, 2005). The environmental integrity principle guarantees that human activities are designed to protect land, air, and water resources (Bansal, 2005). The aim of the social equity principle is to create a society where all members have equal access to resources and opportunities (Bansal, 2005). The economic prosperity principle ensures the quality of human life through creation and distribution of goods and services in a fair and transparent manner (Bansal, 2005). This study refers to "sustainability" as the integration of these three aspects.

Powell, 1983), strategic responses to institutional pressures framework (Oliver, 1991), and management control systems (MCS) literatures. Institutional theory suggests that organisational success is a function of conforming to the institutional pressures (e.g. coercive, mimetic, and normative) and, in turn, organisations become homogeneous (DiMaggio and Powell, 1983). Passive organisations of this nature may merely comply with compulsory and minimum requirements of sustainability regulations and stakeholder demands through defensive lobbying and by taking actions at the end of the processes. Organisations following passive responses to institutional pressures for sustainability are less likely to gain improved performance (Perego and Hartmann, 2009).

In contrast, Oliver (1991) argues that organisational success is not merely based on blind conformity to institutional pressures, but that active organisational resistance varies from passive conformity to proactive manipulation. These strategic responses are acquiescence, compromise, avoidance, defiance, and manipulation. Reinforcing Oliver's view, Bromley and Powell (2012, p. 519) propose that "there is a need for more reflective and proactive responses to external pressures…how organizations can mediate environmental pressures and how they can shape their environment would be useful". Moreover, in the sustainability context, Perego and Hartmann (2009, p. 399) highlight that "in response to such [environmental] institutional pressures, companies are increasingly adopting voluntary environmental strategy in order to effectively manage the environmental impacts of their processes, products and services". While Oliver's strategic responses framework has gained much attention in the strategic management and general management literature, little is known about whether and how organisations use these strategic responses to institutional pressures for sustainability (e.g. Beddewela and Fairbrass, 2015), and how accounting systems shape intra-organisational dynamics and practical variances in strategic responses to institutional pressures for sustainability (cf. Lounsbury, 2008).

MCS, as fundamental operational systems for the effective and efficient utilisation of resources in input, process, and output relationships, play an important role in formulating and implementing organisational strategy (Langfield-Smith, 1997; Kober et al., 2007; Tucker and Parker, 2015). MCS support organisational strategy by communicating objectives, monitoring performance, and motivating to accomplish goals (e.g. Simons, 1995; Lindsay et al., 1996; Langfield-Smith, 1997). While the typical role of MCS is largely to facilitate financially-oriented decision making, researchers have argued for a change to the traditional role of MCS to capture wider institutional expectations, particularly in responding to stakeholders'

sustainability concerns (e.g. Merchant, 2012; Bebbington and Larrinaga, 2014; Baker and Schaltegger, 2015; Ditillo and Lisi, 2016). Sustainability control systems, such as eco-controls, have emerged as a new form of MCS in order to support sustainability strategic decision making (Henri and Journeault, 2010; Schaltegger and Burritt, 2010; Gond et al., 2012; Arjaliès and Mundy, 2013; Lueg and Radlach, 2015; Ditillo and Lisi, 2014, 2016).

Tucker and Parker (2015, p.117) emphasise that "…MCS are also adopted to meet organisational needs for institutional, social and political legitimacy that may be inconsistent with rational economic reasons". Supporting this view, Larrinaga-Gonzalez and Bebbington (2001, p. 269) argue that "organisations can and do change in substantive ways when they respond to the environmental agenda and the environmental accounting is part of the process of enabling these organisational changes". There is a growing body of research that focuses on the use of sustainability control systems in the formulation and implementation of sustainability strategies (e.g. Gond et al., 2012; Arjaliès and Mundy, 2013), yet, it is not clear whether and how organisations use sustainability control systems in strategic responses to institutional pressures for sustainability, and whether the use of sustainability control systems enables organisational changes and practical variances (cf. Lounsbury, 2008). More specifically, the current literature is relatively silent about (i) whether and how organisations use proactive strategic responses in responding to institutional pressures for sustainability, and (ii) whether and how organisation use internal control mechanisms, such as sustainability control systems in proactive strategic responses to institutional pressures for sustainability. Hence, this study aims to contribute to the strand of literature concerning the use of sustainability control systems in strategic responses to institutional pressures for sustainability.

Despite its importance to whether and how organisations use sustainability control systems in strategic responses to institutional pressures for sustainability, a review of the literature reveals that a fair amount of research examining MCS and institutional pressures for sustainability has contributed to the design characteristics of MCS using a contingency approach (e.g. Delmas and Toffel, 2004; Durden, 2008; Pondeville et al., 2013; Rodrigue et al., 2013). For instance, while Durden (2008) discusses how stakeholders influence the design of a socially responsible MCS, Rodrigue et al. (2013) show stakeholders' impacts on the design of strategic performance measurement systems. In a similar study, Pondeville et al. (2013) find that while market, community, and organisational stakeholders influence the design of environmental MCS, the regulatory stakeholders only support the design of an environmental information system. However, Norris and O'Dwyer (2004) show how MCS influence

managers' social responsive decision making, and its impact on corporate social performance. Tucker and Parker (2015) comment that as a majority of the prior studies in this strand of literature have employed a contingency based perspective to examine the MCS-strategy relationship, there is a need to understand the use of MCS by referring to the institutional perspective. Nevertheless, extant literature reveals that, to-date, MCS studies following an institutional approach have contributed extensively to the institutional pressures (e.g. Delmas and Toffel, 2004; Phan and Baird, 2015), but have paid less attention to integrating the strategic responses to institutional pressures framework, and to examining the use of sustainability control systems in strategic responses to institutional pressures for sustainability. This study provides novel insights into the sustainability control systems, strategy and sustainability literatures. Moreover, it also contributes to enhance our understanding of the use of sustainability control systems in strategic responses to institutional pressures for sustainability and organisational dynamics and practical variances (Oliver, 1991; Larrinaga-Gonzalez and Bebbington, 2001; Lounsbury, 2008; Ball and Craig, 2010; Ditillo and Lisi, 2016). Accordingly, this study aims to address the following three research questions

1. What forms of institutional pressures (i.e., coercive, mimetic and normative) can influence an organisation to adopt sustainability?

2. How did the organisation respond (e.g., by acquiescence, compromise, avoidance, defiance, and manipulation) to institutional pressures for sustainability?

3. What was the role of sustainability control systems in supporting strategic responses to institutional pressures for sustainability?

In order to address these research questions, the study uses a case study method. Data were collected by interviewing sustainability managers of a large-scale multinational apparel manufacturing organisation with its headquarters in Colombo, Sri Lanka. The organisation heavily invests in sustainability and implements various sustainability programs. The extant sustainability management literature in the Sri Lankan context has contributed a good deal to our understanding on sustainability reporting (Abeysekera and Guthrie, 2005; Beddewela and Herzig, 2013; Thoradeniya et al., 2015) and corporate social responsibility practices (Fernando, 2007; Beddewela and Fairbrass, 2015; Perry et al., 2015). However, the literature is silent about how organisations use sustainability control systems in sustainability management in general, and the use of sustainability control systems in strategic responses to institutional pressures for sustainability in particularly. Among the few studies that examine MCS in sustainability management, using a life-cycle analysis, Munasinghe et al. (2016) recently examined the

carbon and energy footprint of apparel manufactured in Sri Lanka. From an eco-control approach, Gunarathne and Lee (2015) examine the use of EMA in the hotel sector in Sri Lanka.

Besides the lack of sustainability control systems studies in strategic responses to institutional pressures for sustainability, recent studies demonstrate that Sri Lanka provides a rich context to examine sustainability practices (Beddewela and Fairbrass, 2015; Perry et al., 2015; Thoradeniya et al., 2015). Studying the use of MCS in strategic responses to institutional pressures for sustainability in the Sri Lankan context is important with its predominant Buddhist cultural values that emphasis on environmental preservation, ethical manufacturing, social justice, fairness, equity, and environmental norms and regulations (Beddewela and Fairbrass 2015; Perry et al., 2015; Thoradeniya et al., 2015). Perry et al. (2015, p. 741) stress that "ethical practices in Sri Lankan garment manufacturers are reinforced by culture norms, especially the moral teachings of the predominant religious persuasion of Sinhalese Buddhism, which demands fairness, social justice and equity". Therefore, selecting Sri Lanka as a research context to examine the use of sustainability control systems in strategic responses to institutional pressures for sustainability has important contextual and conceptual implications in the MCS literature (Hopper et al., 2009) and sustainable development (Prahalad and Hart, 2002) in the developing country context.

4.2. THEORETICAL FRAMEWORK

Changing perceptions of sustainability increasingly influence organisations to implement sustainable practices, often in response to pressure from governments and regulatory bodies, transnational organisations, such as the International Labour Organisation, United Nations Global Compact, professional and industry associations, competitors, community and interest groups, consumers and investors, and internal organisational directions, such as boards of directors (Norris and O'Dwyer, 2004; Bansal, 2005; Clemens and Douglas, 2005; Delmas and Toffel, 2008). Typically, organisations respond to institutional pressures for sustainability by different means with the aim of gaining legitimacy and competitive advantage (Bansal, 2005). Scherer et al. (2013) note that organisations commonly use three strategies: adapt to external expectations, manipulate the perception of stakeholders, or engage in a discourse with those who question their legitimacy. Surroca et al. (2013) posit that multinational enterprises respond to stakeholders' expectations for greater corporate social responsibility by transferring socially responsible practices from headquarters to overseas subsidiaries. In a similar context, Tingey-Holyoak (2014) found that increased managerial connectedness mitigates the resistance to water storage policy pressures in Australia. According to Delmas and Toffel (2008), managers

adopt distinct sets of management practices in responding to different influences of corporate departments that force the prioritisation of external environmental pressures and adopt different management practices. Accordingly, while the extant literature suggests that organisations tend to employ different strategic responses in responding to institutional pressures for sustainability (e.g. Sharma, 2000; Iarossi et al., 2013; Beddewela and Fairbrass, 2015), it is not clear what internal control mechanisms support such strategic responses.

This study argues that organisations use sustainability control systems to strategically respond to institutional pressures for sustainability. As depicted in Figure 4-1, institutional pressures for sustainability consists of three pressures, namely coercive, normative, and mimetic sustainability pressures (DiMaggio and Powell, 1983). Prior studies have employed institutional theory to examine organisational responses towards sustainability related practices conceptually (e.g. Jennings and Zandbergen, 1995; Delmas and Toffel, 2004), and empirically (e.g. Bansal and Roth, 2000; Bansal, 2005; Delmas and Toffel, 2008). Oliver (1991) suggests that organisations may respond to these institutional pressures for sustainability using any of five strategies: acquiescence, compromise, avoidance, defiance, and manipulation. This study proposes that these strategic responses are supported by three fundamental elements of MCS: communicating objectives, monitoring performance, and motivating to accomplish goals. More specifically, it examines how different sustainability control systems tools are used in chosen strategic responses to institutional pressures for sustainability.

FIGURE 4-1 FRAMEWORK OF THE STUDY
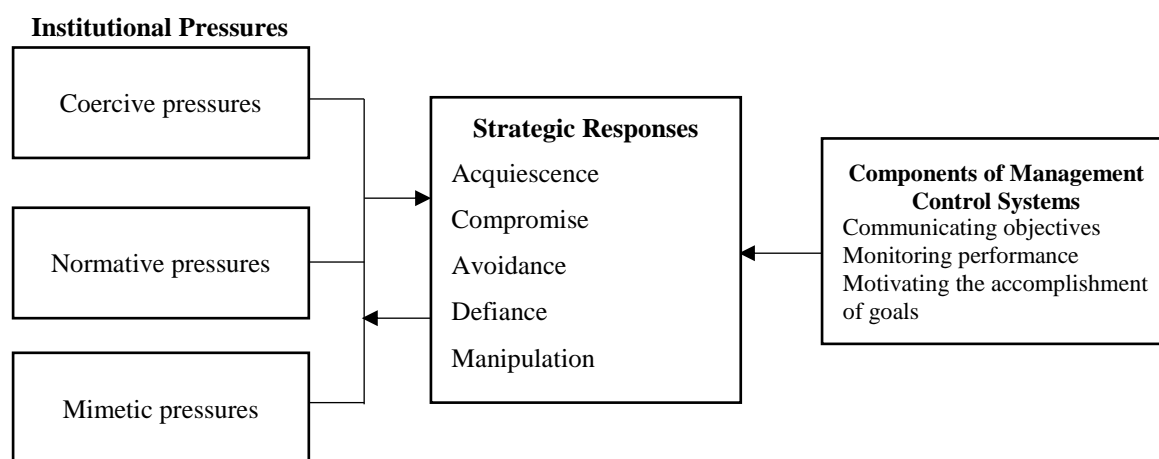
Institutional pressures for sustainability

Institutional theory posits that organisational survival is primarily based on conforming to social norms of acceptable behaviour (DiMaggio and Powell, 1983). DiMaggio and Powell (1983) argue that organisations tend to become isomorphic by complying with the common

institutional environment as a means of attaining legitimacy and propose three mechanisms through which organisations become isomorphic, namely coercive, normative, and mimetic pressures.

Coercive pressure is based on "political influences and the problems of legitimacy" (DiMaggio and Powell, 1983, p. 150) and in the sustainability arena may derive from the imposition of regulations to control environmental pollution, payment of minimum wages, and imposition of penalties for the violation of environmental and labour laws (Bansal, 2005; Clemens and Douglas, 2005). Organisational inability to comply with coercive pressures may cause negative consequences, such as loss of earnings, a damaged reputation, or cancellation of a licence to operate (Oliver, 1991).

According to DiMaggio and Powell (1983), mimetic pressure underscores organisational voluntary imitation of highly legitimate organisations in an industry as a way of minimising environmental uncertainties. DiMaggio and Powell (1983, p. 152) state that "organisations tend to model themselves after similar organisations in their field that they perceive to be more legitimate or successful". According to Bansal (2005), organisations tend to capitalise on the success of peers through imitation. Sustainability mimetic pressures include the modelling of energy efficient technologies, environmentally friendly policies and corporate social responsibility practices implemented by peer organisations.

Normative pressure focuses on the organisation's social obligations, responsibilities, and conduct. DiMaggio and Powell (1983) note that organisations become socialised when they collaborate with peer organisations. Normative pressures related to sustainability include compliance with industry trade associations and professional bodies to implement environmentally friendly businesses as a way of reflecting industry membership.

Strategic responses to institutional pressures

Ball and Craig (2010, p. 283) explain that "neo-institutional theory can increase understanding of an organisation's general response to social and environmental issues and social activism". While institutional theory describes organisational success as a function of conforming to the institutional environment, it has been criticised for its inability to expound organisational self-interest and active agency in reacting to institutional pressures (Oliver, 1991; Lounsbury, 2008). A review of the literature suggests that organisational responses to institutional pressures for

sustainability are more likely to be based on internal dynamics, interests and agency determinants. In order to understand the rationale behind organisational responses to institutional pressures for sustainability, this study incorporates strategic responses to the institutional process typology proposed by Oliver (1991).

Oliver's (1991) strategic response typology, which is based on institutional and resource dependence theories, explains organisational strategic responses to institutional pressures by outlining practical organisational phenomenon, such as self-interest and active agency. The framework emphasises that organisations are not merely driven by long standing economic rationality, but social legitimacy as well. Oliver (1991) posits that organisations do not irrationally conform or acquiesce to institutional pressures; rather, they may attempt to strategically respond by implementing different resistance strategies. Oliver (1991, p. 159) highlights that logical organisations strategically respond to institutional pressures by raising the questions of "why these pressures are being exerted, who is exerting them, what these pressures are, how or by what means they are exerted, and where they occur". Accordingly, Oliver (1991) identified five types of strategic response: acquiescence, compromise, avoidance, defiance, and manipulation.

Acquiescence proposes that organisations comply with institutional pressures as a way of enhancing legitimacy and social support (Oliver, 1991). Conformity is described by three tactics: habit, imitation, and compliance. Habitual conformity reflects organisational response to taken-for-granted norms. Under the habitual response, "organisations reproduce actions and practices of the institutional environment that have become historically repeated, customary, conventional, or taken-for-granted" (Oliver, 1991, p. 152). The imitation tactic refers to mimicking the best practices of successful organisations and accepting advice from consulting firms and professional associations, in particular, when under uncertain environmental conditions (Oliver, 1991). Oliver (1991, p. 152) defines compliance "as conscious obedience to or incorporation of values, norms, or institutional requirements". Amongst these three tactics, compliance is a more active response to institutional pressures.

The compromise response demonstrates how organisations respond to conflicting or inconsistent institutional pressures using balancing, pacifying, and bargaining tactics (Oliver, 1991). While Oliver (1991, p. 153) identifies balance as "the organisational attempt to achieve parity amongst or between multiple stakeholders and internal interests", organisational attempts to partially conform to institutional pressures are termed as pacifying. Using bargaining tactics,

organisations may negotiate with different institutional constituents to obtain concessions (Oliver, p. 1991).

Avoidance is manifested by concealing, buffering, and escape tactics: organisations avoid institutional pressures by implementing modifying strategies (Oliver, 1991). According to Oliver (1991, p. 154), "concealment tactics involve disguising nonconformity behind a facade of acquiescence". Organisations use buffering tactics to reduce institutional inspections or evaluations by partially decoupling organisational technical activities from institutional expectations (Oliver, 1991). Using escape tactics, organisations may exit the context within which institutional pressure is exerted and may change organisational systems to avoid conformity (Oliver, 1991).

A defiance response entirely denies institutional pressures (Oliver, 1991). Characterised by dismissing, challenging, and attacking, organisations adopting defiance strategies actively resist institutional pressures (Oliver, 1991). A dismissing tactic is more likely to be used in situations where organisational goals deviate from or are contradictory to institutional expectations (Oliver, 1991). Organisations tend to challenge institutional rules, norms and expectations in situations where pressures seem irrational (Oliver, 1991). The attack tactic is a very active response, when compared to dismissing and challenging, in which "organisations strive to assault, belittle, or vehemently denounce institutionalised values and the external constituents that express them" (Oliver, 1991, p. 157).

Manipulation reflects the most extreme level of active resistance to institutional pressures, where organisations are motivated to co-opt, influence or control pressures (Oliver, 1991). The purpose of co-option is to neutralise institutional pressures to enhance legitimacy (Oliver, 1991). According to Oliver (1991, p. 158), "influence tactics may be more generally directed toward institutionalised values and beliefs or definitions and criteria or acceptable practices or performance". The controlling tactic is employed to establish power or domination over the institutional constituents that put pressure on the organisation (Oliver, 1991).

The role of sustainability control systems in strategic responses to institutional pressures for sustainability

The term management control has been developed as a multifaceted practice representing both formal and informal MCS. Simons (1994, p. 5) defines MCS as "the formal, information-based

routines and procedures managers use to maintain or alter patterns in organisational activities". MCS reflect three integrated and essential components: (i) specifying and communicating objectives; (ii) monitoring performance through measurements (feedback/control); and (iii) motivating employees to accomplish objectives by linking reward systems to objective achievement (Otley and Berry, 1980; Lindsay et al., 1996; Norris and O'Dwyer, 2004). According to Lindsay et al. (1996), the first component depicts different control mechanisms utilised to communicate organisational objectives. The second control mechanism is employed to provide feedback on organisational performance and to take appropriate measures to ensure that objectives are achieved (Lindsay et al., 1996). The third component provides a platform for the organisation to motivate and encourage employees by evaluating performance (Lindsay et al., 1996). It is essential for an organisation to integrate all three components of MCS in order to successfully achieve its objectives (Lindsay et al., 1996; Norris and O'Dwyer, 2004).

The conventional wisdom of implementing MCS has been to provide information that enhances technical and operational efficiency through planning and control. However, traditional MCS tend to be narrowly focused on shareholders' financial interests and ignore broader stakeholder needs (Otley, 1994; Norris and O'Dwyer, 2004; Durden, 2008; Burritt and Schaltegger, 2010; Gond et al., 2012; Merchant, 2012; Pondeville et al., 2013; Rodrigue et al., 2013). An alternative wisdom argues for MCS to strategically respond the environment in which they operate and therefore better serve the wider needs of stakeholders (Merchant and Otley, 2007; Joshi and Krishnan, 2010). CIMA (2010, p. 2) asserts that "failure for management accountants to get involved now, when key decisions are being taken in areas like carbon trading and compliance with new climate change related regulations, could result in far higher costs, lost opportunities or reduced competitiveness". Baker and Schaltegger (2015) highlight the importance of a pragmatist view of social and environmental accounting to effectively support the organisational engagement with stakeholders' sustainability concerns.

4.3 RESEARCH METHOD

The case study was undertaken in the apparel industry, which was chosen because it has been criticised for its unsustainable manufacturing practices and recent scandals, such as Nike, Timberland, Rana Plaza and Gap (Ascloy et al., 2004). The criticism and these scandals are due to issues such as poor workplace conditions, labour exploitation, gender discrimination, human rights issues, large carbon and energy footprints, unsustainable waste disposal mechanisms, excessive usage of chemicals and inequitable profit distribution throughout the supply chain (Ascloy et al., 2004). The Sri Lankan apparel industry was considered a suitable research

context because (i) the country is amongst the top apparel producers in the world relative to its population, (ii) more than 50% of Sri Lanka's export income generates from the apparel sector, (iii) the apparel industry employs more than 15% of Sri Lanka's workforce, (iv) there is increasing Western/foreign investor interest in this sector due to the greater emphasis on sustainable manufacturing practices compared to other apparel manufacturing countries, (v) the Sri Lankan industry has a reputation for sustainable and ethical business and manufacturing practices, and (vi) the focus on the production of "Garments Without Guilt".

AMO,[12] a privately-owned large-scale apparel manufacturing organisation, was selected as the case study site because of its investment in sustainability projects and practices, and its outstanding public image relative to other organisations in the industry for its commitment to sustainability. AMO, with its headquarters in Colombo, Sri Lanka, is a major apparel manufacturer for a range of well-known global brands[13] with 41 manufacturing facilities spread over 13 countries. Its annual turnover surpassed $1.5 billion in 2013 and it employs more than 74,000 people, as well as generating as many indirect employment opportunities. AMO is a suitable research site because it uses formal and informal management control practices and because of its adoption of specific sustainability actions, including employment of sustainability managers, specialised sustainability divisions, an international reputation for sustainability, and recognised innovation and industry leadership in sustainability initiatives.

AMO's internal operational structures and procedures for the implementation of sustainability practices are well defined and structured. A Board member represents sustainability at the highest level at AMO. Under the Board member, there is a director who is fully responsible for sustainability. Next to the director, a corporate sustainability team looks at strategy, implementation and monitoring of projects, funding and budgeting and all other related tasks. From the corporate level sustainability team, there are three cluster teams headed by divisional managers. Finally, at the plant level, the sustainability champion and sustainability teams are responsible for the implementation of sustainability projects. In addition to that, there is a central environmental sustainability steering committee that consists of all managers across functions. The sustainability steering committee represents all the heads of cross functional teams and all the heads of cluster wide sustainability teams.

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[12] The organisation's name and the names and job titles of the interview participants are confidential, in accordance with ethics approval to conduct the study.
[13] Fashion retailers include Marks and Spencer, Victoria's Secret, Nike, GAP, Patagonia, Banana Republic, Reebok, Tesco, Sara Lee, Lululemon etc.

The data were collected from multiple sources, namely semi-structured interviews, internal and publicly available documents, informal conversations, interviews with an independent sustainability expert who consults with AMO on sustainability practices, and visits to the manufacturing plants. Semi-structured interviews were conducted with 15 sustainability managers because of their knowledge, experience and involvement in the design and implementation of sustainability practices. Ten participants represent senior and middle level sustainability managers of divisional head offices while the remaining five participants represent senior and middle level sustainability managers from manufacturing plants (See Table 4-1).

TABLE 4.1 DETAILS OF PARTICIPANTS AND INTERVIEWS

Designation	Organisational Representation	Date of Interview	Duration
Senior Manager 1	Division 1	04/11/2013	00.50.51
Senior Manager 2	Division 2	08/11/2013	00.56.02
Manager 1	Division 3	29/11/2013	01.20.25
Manager 2	Division 1	27/11/2013	00.47.32
Manager 3	Division 1	04/11/2013	00.58.36
Manager 4	Division 1	13/11/2013	00.48.51
Manager 5	Division 2	06/11/2013	00.32.36
Junior Manager 1	Division 1	04/11/2013	00.48.41
Junior Manager 2	Division 3	29/11/2013	00.39.03
Junior Manager 3	Division 1	05/11/2013	00.49.51
Junior Manager 4	Division 2	20/11/2013	00.54.21
Junior Manager 5	Division 2	06/11/2013	01.06.02
Junior Manager 6	Division 1	04/11/2013	00.44.17
Junior Manager 7	Division 1	13/11/2013	00.26.54
Junior Manager 8	Division 1	04/11/2013	00.24.25
			Total: 728 minutes.

The interview guide included four key themes: (i) institutional pressures for sustainability; (ii) strategic responses to institutional pressures for sustainability; (iii) use of MCS in implementing sustainability practices; and (iv) use of MCS in strategic responses to institutional pressures for sustainability. In addition to interviews, a one day site visit was undertaken to AMO's flagship green factory, regarded as the world's first purpose-built carbon neutral lingerie factory certified by the Leadership in Energy and Environmental Design Platinum certification of the U.S. Green Building Council. The site visit featured presentations about AMO's sustainability practices followed by extensive discussions with operational and factory managers. Detailed notes were taken during discussions. A further two visits were undertaken to the other manufacturing plants where interviews were conducted. Internal and external (publicly available) documents referred to in the study include sustainability reports, communication on progress reports submitted to the United Nations Global Compact, external sustainability research publications on AMO, sustainability policy documents, AMO's sustainability case studies, in-house magazines, news archives, industry reviews and press releases, organisational charts, and website information. Internal documents on sustainability strategic plans were

classified as confidential documents and were not allowed to be taken away for coding and analysis purposes. However, permission was given to take detailed notes. Appendix 1 gives a detailed analysis of the documents referred to in the study.

NVivo 10 qualitative data analysis software was utilised for coding and analysing data. A constant comparative method of qualitative data analysis was employed in the inductive coding process to uncover trends and themes used to systematically compare the findings and interpretations of text assigned to a particular category of codes that emerged in the analysis (Silverman, 1993). NVivo reports data coding in 'nodes'. In particular, nodes are the themes that are used to store coded interview responses and documentary evidences. The first category of analysis uncovered general evidence related to main codes to reflect categories, for instance institutional pressures for sustainability. As the inductive data coding continued, new sub-nodes emerged and were integrated into the analysis accordingly. The main nodes were further analysed using a within-category analysis method where sub-nodes were explored separately, and then main nodes were summarised as the integration of sub-nodes. For example, evidence for institutional pressures for sustainability was categorised in terms of coercive, normative, and mimetic pressures. In order to ensure consistency across codes and accuracy of the data extracted, several nodes that are coded under common themes were allocated to relevant themes appropriately. For instance, Board of Directors, employee empowerment, training and development are coded as institutional pressures for sustainability as well as MCS. Communication of sustainability news and updates is coded as both formal and informal controls. AMO's refusal to certify garments as free of hazardous chemicals is coded as both an avoidance response and a defiance response. Further, documentary evidence was coded and integrated specifically to verify the consistency of interview responses. In the final stage of the analysis, all the nodes were integrated into relevant groups by creating a hierarchy in the tree nodes structure (tree branch). Appendix 2 presents the data tree node depicting main and sub-nodes identified in the analysis process.

In addition, other qualitative analyses were also employed to analyse data. For instance, NVivo facilitated models, charts, queries and matrices to uncover themes by visualising data. Further, memos and annotations were useful in tracking the analysis. Coding query was a useful tool for checking connections as to how the data are coded in different nodes. NVivo analytical tools such as keywords-in-context, domain analysis, taxonomic analysis, componential analysis enabled searching for keywords, phrases, and relationships of key words/themes.

4.4. THE CASE STUDY

The case study analysis section discusses sustainability practices at AMO, institutional pressures for sustainability, strategic responses to institutional pressure for sustainability, and finally the use of management control systems in strategically responding to institutional pressures for sustainability.

4.4.1 Sustainability practices at AMO

AMO's sustainability agenda includes environmental, social, and economic aspects. AMO's key environmental sustainability practices can be categorised as external and internal. According to Junior Manager 3, external practices are more focused on corporate social responsibility aspects, such as working with schools and community and conducting career development programs. Internal environmental sustainability practices consist of eight work streams: energy, emissions, chemicals, water, waste, eco-products, culture, and standards. The social sustainability initiatives include complying with labour laws, work-life balance, skills development, career advancement, rewarding excellence, wages, health, safety and wellbeing. In particular, AMO has launched a specific program with the aim to empower women, who represent more than 90% of AMO's workforce. AMO contributes to economic sustainability by, for example, operating a successful business that contributes to the country's gross domestic product, employing more than 74,000 employees, and supporting their dependents, contributing to the livelihood of indirect employees, and establishing manufacturing plants in rural areas. For instance, with the support of the United States Agency for International Development, recently AMO commenced two new manufacturing bases in war-affected areas in the Northern Province in Sri Lanka.[14]

4.4.2 Institutional pressures for sustainability

Coercive sustainability pressures. Participants indicated that coercive pressures that influence AMO to implement environmental sustainability are primarily from the Central Environmental Authority, Board of Investment and Sri Lanka Sustainable Energy Authority. The Central Environmental Authority requires all manufacturing organisations, depending on their pollution potential, to compulsorily obtain an Environmental Protection Licence in accordance with the National Environmental Act. The Central Environmental Authority also requires large-scale projects to obtain an Environmental Impact Assessment. Organisations registered under the

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[14] The civil war between the Sri Lankan government and the Liberation Tigers of Tamil Eelam ended in 2009.

Board of Investment must comply with regulatory requirements, including waste management and labour laws. As an energy conservation authority, the Sri Lanka Sustainable Energy Authority has initiated an energy management scheme requiring manufacturing organisations to appoint energy managers who are responsible for the implementation of energy efficiency measures in the appointed institution.

The regulatory requirements for social and economic sustainability practices mainly include labour laws, such as minimum wages, overtime payments, working hours, minimum employment age, health and safety conditions, employee welfare, employee grievances, such as harassment, and abuse. AMO has also been influenced to implement sustainability practices by organisations such as the International Labour Organisation, the United Nations Global Compact, Worldwide Responsible Apparel Production, and Greenpeace. For instance, Junior Manager 3 said that the International Labour Organisation has the strictest regulations towards the apparel manufacturing industry.

International Labour Organisation plays a big role, because, especially with the apparel and textile industry customers are worried that their names will be tarnished, if we are not socially responsible and don't adhere to regulations like minimum wages, minimum age etc.

Most of the participants pointed out that as all the manufacturing facilities of AMO are certified under the ISO 14001 environmental management systems, AMO is obliged to implement and comply with various types of environmental management standards required by ISO certification. AMO is a signatory to the United Nations Global Compact and is expected to submit communication on progress annually by adhering to the United Nations Global Compact reporting requirements in relation to human rights, labour, environment, and anti-corruption. Senior Manager 1 highlighted that while the United Nations Global Compact influences the way AMO practises sustainability, it does not determine what AMO does. Worldwide Responsible Apparel Production is another key institutional body mentioned by participants. It was also revealed that some non-governmental organisations influence AMO through customers or consumers to comply with certain sustainability standards.

According to Senior Manager 1, apparently most of the sustainability pressures from consumers and transnational organisations are imposed on AMO through customers[15].

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[15] The word "customer" refers to large-scale retailers. AMO only manufactures apparel for large retailers, not for individuals.

> *There are certain customer level regimes that we need to work on. On the social sustainability side there is a code of standards that suppliers bring. In addition to the customer specific ones, there are Worldwide Responsible Apparel Production standards and Ethical Trading Initiatives requirements: the first is the American one and the latter is British. Those are the standards that come with our customers.*

AMO's customers also expect to enhance their corporate image in relation to sustainability by motivating AMO to adhere to sustainability practices. The eco-factory, which was built to fulfil one of AMO's major customers' requirements, was critical to the future of AMO's sustainability agenda. According to Senior Manager 1, the eco-factory was a turning point for AMO's sustainability practices. Participants stressed that, as AMO deals with most reputable global fashion and sportswear brands, the customers influence AMO to follow best practice. According to a participant, most of the customers have annual environmental and social audits. A manager also described an example where AMO has to follow certain sustainability guidelines that customers impose on the removal of excess garments in order to protect the customers' brand name and market, and to be loyal to the customer.

All the participants revealed that it is the Board of Directors' commitment that primarily drives and influences the sustainability agenda at AMO.

> *... There is a Board level direction and the managing director is really looking at it. It is not just a tick of a box, but an operational requirement for us. (Junior Manager 4)*

Further, participants emphasised that appointing a specific Board member who is responsible for sustainability at the Board itself shows the Board's influence on sustainability practices. The Board has taken strategic decisions to practise sustainability with a robust policy implementation system called Hoshin Kanri,[16] in which the Board directs a monitoring mechanism to ensure that sustainability strategic plans are properly implemented and targets are achieved. Compliance with Hoshin Kanri is mandatory. Junior Manager 3 clarifies that the Board sets sustainability objectives through Hoshin Kanri and passes these down to the next levels for the design of strategies. Senior Manager 1 highlighted that without strong Board leadership it would be impossible to implement bottom-up management practices in relation to sustainability.

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[16] "Hoshin Kanri is a form of corporate-wide management that combines strategic management and operational management by linking the achievement of top management goals with daily management at an operation level" (Witcher and Butterworth 2001, 651).

Mimetic sustainability pressures. The participants revealed that they are aware of the sustainability practices implemented by leading organisations in the industry, particularly the sustainability initiatives of their competitors. Senior Manager 1 indicated that it has been a crucial task even for competitors to implement sustainability practices due to the increasing demand for green products. Manager 1 also pointed out that the leading organisations in the industry perform well in sustainability and strive to secure sustainability awards conferred by the government and international bodies. Most of the participants revealed that some organisations have initiated sustainability practices that AMO has not been able to achieve yet, but expected to have similar initiatives in the near future.

Modelling sustainability best practices implemented by leading customers and multinational corporations has been one of the key pressures that influenced AMO to enhance its sustainability initiatives. Participants revealed that adopting what customers are doing is a mutual relationship where both parties benefit. Manager 3 remarked that it has also been the practice of customers to share new systems and sustainability practices implemented in global supply chain networks.

AMO compares plants within the group when implementing new sustainability projects or modifying existing ones. Participants noted that there are many group level opportunities and procedures where strategic business units can follow and share experiences with others. Manager 1 outlined how the managers consulted other plants in implementing a biogas generation project.

> *When it comes to implementing a new project we always look at other plants. For example, now there is a project in the pipeline for biogas generation. So we have visited two to three factories not within [AMO] but outside ... where the companies have already implemented such projects. We always refer to the best practice of others. For example, before we installed our energy efficient chiller, I also had visits to other factories, not only within the country but outside the country as well. We got their feedback and we always try to benchmark best practice.*

AMO also shares ideas through formal and informal seminars, workshops, conferences, and forums. Manager 2 explained that the energy managers' forum, which is held every three to four months, is one such forum where energy managers share their experiences and ideas about energy consumption and innovation.

Normative sustainability pressures. While there are formal policies and procedures to develop and implement sustainability practices, top management has been very instrumental in initiating practices in line with their personal sustainability interests, some of which are not directly related to AMO's sustainability targets. Junior Manager 3 explained how the personal sustainability interests and philosophy of the CEO of plant A motivated AMO's sustainability practices.

> *... The CEO there at [Plant A] is very much interested in nature. Some of the sustainability drives that [CEO] has done are not exactly what we are doing in the mainstream. There is a clean-up campaign that is done in [a national park] ... The [CEO] has also recently started a project where they are planting native trees within the facility. It is the [CEO's] personal interest and [AMO's] interest as well ... We are mainly looking at energy, waste, etc. They are working on energy, water, and waste, all of that, but in addition to that they are doing those things the [CEO] is interested in.*

AMO's philosophy on empowerment of employees towards the implementation of sustainability practices is not limited to top management, but is also applicable to all levels of staff. Participants revealed that the top management has empowered the middle and lower level management to implement their own sustainability initiatives at the plant level. Manager 3 explained the capacity and scope to implement sustainability practices:

> *At [AMO] the unique thing is everybody is empowered ... I have worked in seven companies. I have never been able to do what I wanted. Here, as the head of the [section A], I have to implement certain things. I am going out of my comfort zone to think how can I achieve it. It is up to me to be as innovative as possible. I have the money. I have the targets. So, it is up to me.*

Another example can be found in the team appointed to build the eco-factory, which incorporated three principal philosophical dimensions: (i) respect for the context (physical, commercial, and culture); (ii) respect for the user of the factory (particularly the predominantly female workforce who sew the garments); and (iii) respect for other life forms (the existing ecology into which the factory was being introduced).

AMO has taken various training and development initiatives to enhance the knowledge of all its employees. Currently AMO only employs people with sustainability academic and professional qualifications for sustainability specific jobs, such as members of the sustainability team. This approach enhances goal congruence between personal interests and AMO's values. Once employees are recruited to AMO, it is mandatory to undergo an induction programme that includes a dedicated module for sustainability. Depending on the job requirements, after

the sustainability induction program, all employees are provided with sustainability related training. Senior Manager 2 outlined how AMO celebrates sustainability related national and international days and engages in various awareness programmes:

> *Once recruited, [employees] are given sustainability training continuously through the induction programme, annual training sessions, health and safety training, and ISO 14001 training as well. They are also educated on how they can contribute to sustainability practices, such as in water conservation and waste management. We also organise various competitions to celebrate various international days, such as earth day, environmental day. In addition to that we arrange lectures, quizzes, and poster campaigns to enhance their knowledge about sustainability.*

The sustainability practices implemented by AMO have also been influenced by various professional bodies affiliated with the apparel manufacturing and business sector as a whole. In particular, the Garments Without Guilt certification program initiated by the Joint Apparel Association Forum and Sri Lanka Apparel has influenced AMO. AMO's sustainability news documents indicate that:

> *All [AMO's] units have been certified as manufacturers of "Garments Without Guilt" an initiative which focuses on ethical manufacturing and sustainable development assuring the industry's commitment to ethical working conditions, free of child labour, free of forced labour, free of discrimination and free of sweatshop practices. This is an initiative by Sri Lanka Apparel and the Joint Apparel Association Forum, membership of which represents all of the Apparel and Textile businesses in Sri Lanka.*

Participants also highlighted that sustainability related seminars and workshops organised by the Joint Apparel Association Forum were helpful in shaping AMO's sustainability practices. Manager 3 remarked on AMO's partnerships with the Ceylon Chamber of Commerce on sustainability matters.

> *Actually, it is a two way thing. We are taking their [professional bodies'] guidelines and expertise and support while we add value to them also with our expertise. So it is a partnership ... The partnership helps us to grow our business. We can also decide not to partner with them. We do not have any obligation, but we voluntarily comply with them. For example, we just signed up for the biodiversity forum of Ceylon Chamber of Commerce.*

4.4.3 Strategic responses to institutional pressure for sustainability

AMO adopts a proactive approach in responding to institutional pressures for sustainability. Most of the participants highlighted that not only does AMO adhere to regulatory requirements, in many cases it exceeds compliance requirements. For instance, when the government reduced

the employment entry age to 16 years in 2011, AMO retained a minimum employment entry age of 17 years. Senior Manager 2 commented:

> *... Our stand on compliance in not negotiable ... most often, our standards are far higher than the norm and therefore we have set the benchmark which we now advocate for others.*

When asked about AMO's compliance with regulatory pressures, Senior Manager 1 emphasised that AMO's rationale for practising sustainability is not regulatory pressure but to make it part of the organisation's day to day activities.

> *... the basis of our sustainability practices is not regulatory pressures ... and it is not the reason we do sustainability, and we are ahead of the regulatory requirements.*

Participants also stressed that AMO does not feel that most of the institutional pressures for sustainability are regulatory. For instance, Senior Manager 1 asserted that there are no pressures imposed by professional bodies like the Joint Apparel Association Forum as AMO has set standards that tend to be much higher than those prescribed by certification like Garments Without Guilt.

Participants also noted situations where AMO has negotiated and bargained in responding to institutional pressures for sustainability. In such situations, AMO tends to employ a compromise strategy of balance, pacify, and bargain tactics to negotiate within AMO's capacity and interests. For instance, Manager 1 described mismatches between the Board of Investment's environmental requirements and AMO's capacities that affect compliance.

> *... with the high production situations sometimes our effluent treatment plant capacity would not be enough to maintain their [Board of Investment] requirements. In certain instances we have come across situations where Board of Investment has identified that we are out of the tolerance range. So in certain cases we were able to negotiate with them and make them able to understand clear reasons and actually ... we were able to manage the situation ...We always obey the standards, but in certain situations it is possible to negotiate with them as well.*

Participants revealed instances where AMO bargained with institutions to obtain grace periods when AMO was asked to submit specific sustainability related information that was not available at the time of request. In some situations, AMO also negotiated with the Board of Investment in extending the chemical sludge disposal periods to government owned premises. Junior Manager 4 commented that:

... one of our factories is producing chemical sludge which are hazards based. One of the two ways of disposing is landfill and the other one is incineration. Incineration is done only at [Company A] in Sri Lanka. The process is very costly for our generation of about 100kgs per day. To dispose, they charge a huge amount for burning one kilo ... In this instance we have asked for Board of Investment facilities for dumping it for the moment. However, now the grace period is going to be over and now we are doing percentage wise with [Company A], and also we are starting our own incineration facilities which are quite costly.

Two participants also revealed a situation where AMO was able to negotiate with customers regarding the sustainability certifications. According to Senior Manager 2, AMO was able to bargain with customers by explaining country specific reasons for having a particular certificate and reasons why the organisation complies with those certificates voluntarily.

Participants revealed that AMO has avoided and has defied certain institutional pressures in situations where AMO was asked to implement difficult sustainability demands. For instance, when customers asked AMO to certify that garments manufactured by AMO were free from hazardous chemicals, AMO was unable to agree because AMO only contributes approximately 20% of the value chain. Senior Manager 1 explained AMO's capacity within the value chain and its limitations in terms of accountability.

... One of the new things that is going on is the brands want their garments to be free of hazardous chemical. They want us to certify that garments are made free of hazardous chemicals. The problem is that hazardous chemicals do not come from here, but from suppliers. We said no, we can assure you that we do not use hazardous chemicals, but we cannot give you an assurance that we are supplied hazardous chemical free things.

Further, when AMO was asked to submit energy related information to the Sri Lanka Sustainable Energy Authority, some plants decided to avoid submitting some information due to issues related to production differences and confidentiality. The following example is from Junior Manager 7 on how AMO responded to customers' pressures:

... there are certain requests a bit out of the usual work, but possible. Not any impossible demands. Ideally, we would like to do lots of waste management practices, but some are very difficult, like [Customer A's] 2020 goals, because we do not have enough infrastructure facilities to cater for them [at present].

Participants also noted situations where AMO responded to institutional pressures for sustainability using a manipulating strategy. For instance, when the government increased the electricity tariff, AMO partnered with professional bodies and industry associations, such as

the Joint Apparel Association Forum and Sri Lanka Sustainable Energy Authority, to lobby the government about the negative impacts on the industry. It was also revealed that when the Board of Investment unexpectedly stopped the dumping of waste to the Board of Investment dump yard, AMO partnered with other industry partners in the industrial zone to influence the Board of Investment to continue the facility.

4.4.4 Use of management control systems in strategically responding to institutional pressures for sustainability

Specifying and communicating sustainability objectives. AMO's sustainability practices are based on explicitly written corporate policies. In particular, while there is a common sustainability policy for the entire group, AMO has also developed divisional and plant level sustainability policies depending on the specific plant requirements. Sustainability policies are further classified into divisions by encompassing environmental, social and economic sustainability aspects in order to closely monitor the progress of each aspect. Employees are informed of policies through a particular internal control mechanism called 'share point'. In order to implement comprehensive sustainability practices by encompassing all stakeholders, AMO also takes into account the policies of joint venture partners and customers in the design of its sustainability policy. Junior Manager 7 described AMO's experience with one customer:

> *[Customer A] will have certain environmental standards. The bases are the same, but they have extra stuff, depending on the customer, but we adopt from them because the customer requirements are important to the business.*

The sustainability policy framework has a clear focus on which areas within AMO demand special attention. For instance, AMO's Communication on Progress Report-2012 highlights that empowerment of women has been incorporated into mainstream corporate sustainability polices.

AMO has incorporated sustainability into its corporate agenda, starting from its vision and mission statements. Recently AMO changed its vision statement from a focus on lean manufacturing to one on sustainability and innovation. AMO uses Hoshin Kanri for strategic planning in all organisational practices, including sustainability planning. Junior Manager 1 highlighted how Hoshin Kanri helps AMO to design sustainability strategies and implementation.

[AMO] has Hoshin Kanri that summarises the plans for five years or one year. Usually we have plans for five years ... From [AMO's] Hoshin each division gets their own Hoshin and from the division it goes to plant level. In our main Hoshin we have included sustainability targets ... Hoshin Kanri is very important for [AMO's] Board and every month they review it. Therefore, continuously it is monitored and reviewed.

Once sustainability targets are forwarded from the Board to divisions and then to the plant level through Hoshin Kanri, as indicated by Manager 2, plant level managers are empowered to identify suitable strategies to implement sustainability targets.

AMO constantly reviews past sustainability plans and their respective achievements to set future strategies. AMO forecasts sustainability practices, reviews continuously and sets revised targets accordingly. Importantly, the sustainability planning agenda is highly integrated with other operational systems that provide clear guidance on how to achieve plans as predicted. AMO also constantly reviews past sustainability plans and their respective achievements to set strategies for the next terms. The Communication on Progress Report 2012 highlights that "After revisiting and evaluating the performance for the period 2010–2012, [AMO] has launched a more aggressive strategy to address organisational environment footprint for the five year period; 2013–2017 which is integrated with the core business strategy and systems".

Use of management control systems in monitoring sustainability practices. Sustainability data collection objectives are aligned with sustainability policies, planning, strategies, and performance measurement systems. Manager 3 summarised the main objectives of the sustainability data collection as to reduce consumption, to understand whether the targets have been achieved and to decide what needs to be done next. Junior Manager 4 specified some of the sustainability data that AMO collects on a monthly basis.

On a monthly basis, we collect [manufacturing plants'] energy intensity, water intensity and their waste aspects and production data, and how that would vary. In social terms, how many accidents, how many major injuries, how many non-compliances, how many overtime hours.

Through different management systems, such as the Energy Management System and Eco-Tracker, separate sustainability related data are collected (e.g. air conditioners, compressors, and generators). Plant level sustainability champions are primarily responsible for entering data into the online Eco-Tracker on a monthly basis. Manager 1 explained the process of the Eco-Tracker:

Every month we do look at our energy bills and we collect all the data and we have a good system which is called Eco-Tracker where we need to report energy, emission related data through Eco-Tracker and we collect all the data, like electricity consumption, fuel consumption, water, emission and waste, everything. We also have to give them to top management as well. It is an online system.

Sustainability data related to employees and welfare are collected using a manual Management Information System. Data collected on a daily basis is entered into the system on a monthly basis, and then AMO generates a quarterly sustainability report, which is circulated amongst all interested parties for decision-making purposes. AMO also undertakes sustainability investment analysis before initiating any project to ascertain the impact and viability of the project. In addition to environmental and economic feasibility, analysis also incorporates people's behaviours and attitudes. While it is a legal requirement for some large-scale projects, AMO employs this analysis as a means of enhancing the quality and validity of projects by minimising the negative effect to the environment and society. According to Manager 3, AMO's analysis is aimed at establishing the long-term validity of sustainability projects.

For every project, short-term projects we used to look at the payback period. But later on management realised that payback is not the only way to go for sustainability because R&D [research and development] has a long-term impact. If a factory is supposed to have a water treatment plant, it is very difficult to calculate the payback period. For short-term project I would say payback, long-term projects are more strategic.

Sustainability project appraisal is a prerequisite to obtaining the Environmental Protection Licence. The Communication on Progress Report 2012 indicates that AMO assessed the sustainability impacts of the latest two manufacturing plants built in the war-affected areas.

AMO allocates a minimum of 0.5% revenue of every plant for ongoing environmental sustainability projects. In addition, AMO budgets other sustainability related activities, such as ISO certification expenses, employee training and development, various forums and workshops, and continuous maintenance. Divisions and plants have been empowered to initiate suitable sustainability projects by requesting funds for new projects. While there is a fixed allocation for existing projects, the allocation may be varied as a combination of fixed and normal budget for initiating other projects. Manager 3 clarified the procedure for budgeting for new sustainability investment while maintaining existing projects:

… it is actually subjective. If you have new investments, it depends on where it comes and for what purpose. Let us say if you are expanding your business and if you are investing in another country, then it is actually the budget [that] is coming from the normal budget.

But if you have sustainability initiatives then they get money from our budget and combination.

Senior Manager 1 also explained the importance and alignment of preparing budget and other organisational procedures in order to achieve the next year's sustainability targets.

We do things in a very efficient way before starting the year. Now [November, 2013] for example, for 2014 we have completed all the budgeting for the sustainability side, because we have been given a policy and under the policy it is clearly mentioned that we need to invest minimum of 0.5% of our revenue for sustainability projects. That is for the factory ... Likewise, every strategic business unit needs to come up with their proposal to invest at least 0.5%.

Participants also commented that once funds are allocated for a particular plant or projects, it is the responsibility of management to spend funds, or provide reasons for not spending the allocations. Manager 3 stressed the responsibility of spending allocated funds; if a unit has not spent the allocated funds it means that either the plant has achieved the targets or the plants are inefficient. Junior Manager 2 explained that budgeting is an important MCS tool to predict and analyse future sustainability opportunities and threats when formulating sustainability strategies and commented that sustainability budgeting plays a crucial role in proactively responding to sustainability pressures.

AMO undertakes life-cycle cost analysis for sustainability related products and projects. The first life-cycle cost analysis for products was undertaken for carbon neutral manufacturing of bras at the eco-factory in response to the requirements of a key customer. Junior Manager 3 explained the usefulness of the analysis in decision making:

... going forward, if we are trying to reduce the life-cycle impact of our products, then we can use the data that we have gathered here in order to see where is the best place to minimise it.

The life-cycle cost analysis for the carbon neutral manufacturing of bras meant that AMO was able to identify areas requiring particular attention in order to reduce its sustainability impact. Similarly, AMO often analyses life-cycle cost in purchasing capital expenditure machines. Participants noted that such analysis helps to convince top management and group level managers in the decision-making process.

Use of sustainability performance measurement systems. Sustainability performance measurement systems (PMS) play an important role at AMO in integrating all the management

functions towards the achievement of sustainability objectives. AMO measures sustainability performance targets using key performance indicators (KPIs) in terms of environmental, social and economic perspectives. The sustainability KPIs are forwarded from the Board to plants using Hoshin Kanri. For instance, AMO's major environmental sustainability KPIs include reduction of energy, water use, emission intensity, and waste. Once the KPIs are delivered to the divisions and plants, then management conducts continuous reviews to monitor the progress of the achievement of KPIs.

AMO evaluates sustainability performance constantly, reviews progress and rewards divisions, teams, and individuals when they meet targets. In particular, AMO's primary approach to achieving sustainability KPIs is to empower employees. According to Manager 3, empowerment is the key rationale behind the high level of sustainability performance improvements.

> *When everybody is given KPIs, they are given budget and KPIs. It does not matter how you achieve it; that is the empowerment. You can come up with your own ideas and do it. But by the end of the year, you should have achieved it. If you have not achieved it, they will sort out the issue.*

AMO has also developed a specific management control tool called the Calibration tool to evaluate groupwise sustainability performance in a common platform. The tool evaluates the sustainability practices of all divisions from a holistic perspective in line with group level sustainability targets, and rates existing infrastructure, facilitates standardise, replicates best practice, and increases the efficiency of operations. AMO also includes MCS aspects into the new Calibration tool. A team member of the development of the Calibration tool explained the purpose:

> *… earlier we had certain KPIs for HR [human resources], certain KPIs for finance, or we had different ones for energy, water, emissions and waste. We have collected all those under one umbrella and called it Calibration tool, which forms one platform to give a bird's eye view of everything happening in the plant, in the cluster and in the whole company. That is [the Calibration tool] I believe a good management control system that we can develop within our plant. (Junior Manager 6)*

The development of the Calibration tool is considered a novel approach to fulfilling increasing institutional demands. Junior Manager 6 explained that if the existing MCS tools are not capable of fulfilling the emerging institutional pressures, then they also can include those aspects into the new Calibration tool. As noted by Manager 3, AMO also uses MCS as a means of

responding to institutional pressures for sustainability through sustainability auditing procedures in terms of social and environmental compliance.

If you take the auditing procedures, social, environmental everything is being audited ... It is like we have an internal Calibration team and we also get outside parties to come and audit once a year. The customers also come and audit. I would say if you take the management systems, the auditing procedure ensures that everything is in line.

4.5. DISCUSSION

Tables 4-2 and 4-3 summarise the case study findings. Table 4-2 provides a detail analysis of the use of sustainability control systems in strategically responding to institutional pressures for sustainability, with details on institutional pressures for sustainability, strategic responses and respective tactics, relative use of sustainability control systems, and some examples to support the propositions. Table 4-3 depicts examples of sustainability control systems related to sustainability control systems within AMO.

Institutional pressures for sustainability

The findings permit the following theoretical considerations. Grounded in institutional theory (DiMaggio and Powell, 1983), this case analysis demonstrates the presence of all three institutional pressures for sustainability, namely coercive, mimetic and normative. The coercive sustainability pressures were primarily stemming from government and regulators, transnational organisations, customers, and the Board of Directors (see Table 4-2). This is consistent with prior studies, especially undertaken in the context of developing economies such as Sri Lanka, that the state and other host country institutions influence the use of sustainability practices of multinational enterprises (Beddewela and Fairbrass, 2015).

TABLE 4.2 USE OF SUSTAINABILITY CONTROL SYSTEMS IN STRATEGICALLY RESPONDING TO INSTITUTIONAL PRESSURES FOR SUSTAINABILITY

Institutional pressures for sustainability	Strategic response and tactics	Use of sustainability control systems	Relative use of sustainability control systems use in response to institutional pressures for sustainability	Some examples
Coercive pressures (Regulatory, Transnational organisations, Customers, Board of Directors)	Acquiescence (Habit, Imitate, Comply)	Sustainability planning and policies Sustainability life-cycle analysis Internal sustainability operational structure Sustainability data collection Sustainability budgeting Sustainability investment appraisal	High	Comply with minimum wages, age, health and safety requirements Customer's requirement to evaluate the bras produced at the eco-factory and non-eco-factory BOD's sustainability directions Comply with environmental policies
	Compromise (Balance, Pacify, Bargain)	Sustainability policies and planning Sustainability data collection	High	Bargaining with the Board of Investment to extend the deadline to landfill chemical sludge Negotiated for a grace period to submit sustainability related information
	Avoidance (Escape)	Internal sustainability operational structure Sustainability policies and planning Sustainability data collection and communication	High	Avoided customers' demand to certify hazardous chemicals coming from suppliers Escaped submitting sustainability related data due to production differences and confidentiality nature of production systems
	Defiance (Dismiss)			
	Manipulation (Co-opt, Influence)	Sustainability planning, policies, and strategies Internal sustainability operational structure	High	Influenced the government for sourcing electricity to the eco-factory from hydro power Influenced the government to reduce the electricity tariffs
Mimetic pressures (Competitors, Multinational organisations, Group level best practices, Sustainability forums and industry experts)	Acquiescence (Habit, Imitate, Comply)	Sustainability planning, policies, and strategies Sustainability PMS and KPIs	High	Competitive pressure for sustainability awards Comply with group level sustainability decisions Implementing expertise suggestions
	Compromise (Balance, Pacify, Bargain)	Sustainability life-cycle analysis Sustainability investment appraisal Sustainability budgeting	High	Negotiating with group level management to implement best sustainability options (e.g. selecting air condition vs. water cooler/chiller)
	Manipulation (Co-opt, Influence)	Sustainability investment appraisal Sustainability life-cycle analysis Internal sustainability operational structure	Low	Influence group level sustainability practices to implement best choices, such as energy consumption, waste management through the energy managers' forum etc.

Normative pressures (Top management philosophy, Organisational policies, Professional bodies)	Acquiescence (Habit, Imitate, Comply)	Sustainability budgeting Sustainability policies Internal sustainability planning and procedures Sustainability PMS and KPIs	High	AMO's norms of allocating 0.5% of revenue from each plant for sustainability practices
	Compromise (Balance, Pacify, Bargain)	Internal sustainability operational structure Sustainability investment appraisal Sustainability KPIs	Low	Empowerment allowed plant level managers negotiate with top management/BOD to implement their interested sustainability practices by deviating from AMO's main sustainability agenda i.e., solar lamp project
	Avoidance (Escape)	Sustainability data collection Sustainability investment appraisal Sustainability KPIs and PMS	Low	Empowerment allowed managers to buffer the achievement of sustainability targets as predicted by top management and organisational policies
	Manipulation (Co-opt, Influence)	Sustainability policies and planning Internal sustainability operational structure	Low	AMO co-opted and influenced professional bodies to add more values/aspects to sustainability practices (i.e., Ceylon Chamber of Commerce)

TABLE 4.3 SUSTAINABILITY CONTROL MECHANISMS RELATED TO MANAGEMENT CONTROL SYSTEMS

Components of MCS	Sustainability related control mechanisms	Examples
Specifying and communicating objectives	Internal sustainability operational structures and procedures	Organisational structure for sustainability, communication channels (i.e., forums, meetings, conferences), internal sustainability policies, BOD, empowerment etc.
	Sustainability planning	Vision and mission statements, Hoshin Kanri: strategic and operational planning, BOD, TMT empowerment, KPIs, sustainability policies, continuous reviews and evaluations etc.
	Sustainability policies	Group and plant wise sustainability policies, environmental sustainability policies, social sustainability policies (e.g. empowerment of women), water and waste management policies code of conducts, sustainability reporting, recruitment, health and safety, training policies etc.
Monitoring performance (feedback/control)	Sustainability data collection	Eco-Tracker, Energy Management System, Management Information Systems, intranet, KPIs, source documents, such as electricity bills etc.
	Sustainability investment appraisals	Relaxed and extended payback periods, financial analysis (i.e., ratio analysis), strategic analysis, behavioural analysis (i.e., community and employee), budgetary analysis, regulatory analysis etc.
	Sustainability budgeting	Fixed and flexible budgeting, corporate, plant and project wise budgeting, continuous monitoring and reviewing
	Sustainability life-cycle assessments	For products (i.e., eco bras vs. non-eco bras) and capital expenditure machines/equipment (i.e., air conditioners vs. chillers), involvement of both engineers and finance team etc.
Performance measurement systems	Sustainability performance measurement systems	Sustainability KPIs, Calibration tool, monitoring and review mechanism (i.e., meetings, forums, reviews), empowerment, reporting etc.

Among different coercive sustainability pressures, demands from customers and directions from the Board of Directors were the strongest sustainability pressures influencing AMO. This may be partly due to the increasing pressures for large-scale Western retailers to ensure sustainable apparel manufacturing practices in Asian developing country (Momin and Parker, 2013; Beddewela and Fairbrass, 2015). Moreover, top management in large-scale organisations

operating in Sri Lanka would be more concerned about their public image, reputational risks, and predominant Buddhist philosophical values, such as environmental conservation, appreciation of environment, environmental values and legislations (Fernando, 2007; Perry et al., 2015; Thoradeniya et al., 2015). Recent corporate tragedies in Sri Lanka provide a number of examples where organisations failed to comply with environmental regulations. This has eventually tarnished their public image with negative consequences, such as financial losses, and has even led to loss of lives. Given that all organisations operating in Sri Lanka have the same cultural basis that should engender sustainability, the contrast between AMO that seems to have a 'too good to be true' intrinsic attitude to sustainability, and other companies that have failed to meet environmental regulations shows how different approaches to sustainability values influence corporate behaviour.

Following best practice from leading companies in the industry, modelling customers and multinational corporations, benchmarking group level best practice, and learning sustainability best practice from sustainability forums were the main mimetic institutional pressures influencing AMO's sustainability practices. Given the size of AMO, its international appearance, the nature of the industry, and the buyer-supplier relationship, mimicking sustainability best practices from these organisations seems necessary for long-term survival in the apparel manufacturing industry (e.g. Perry et al., 2015). The findings support the theoretical assertion that organisations may mimic their competitors if the customers (e.g. large-scale retailers in this case) insist on using specific sustainability practices for doing business with them. However, Beddewela and Fairbrass (2015) did not find any mimetic pressures that influence corporate social responsibility practices of multinationals operating in Sri Lanka. This may be partly due to the fact that most of the multinationals considered in their study are based in Europe and North America, whereas AMO is a Sri Lankan originated multinational. As Beddewela and Fairbrass (2015) indicated, the multinationals they considered are also market leaders in their specific industries in Sri Lanka. This implies that the mimicking of sustainability practices is influenced by multinationals' country of origin and their market dominance.

As theorised, prominent normative institutional pressures that impacted AMO's sustainability practices were top management philosophy, organisational policies to enhance employees' knowledge on sustainability, and influence from professional bodies to implement sustainability (e.g. Beddewela and Fairbrass, 2015). This supports Jennings and Zandbergen's (1995, p. 1041) suggestion to examine the impact of top management's interpretations on organizational choice of sustainability strategies: "In ecology, there is a large role for individual

interpretation and innovation (the role of an individual actor), which institutional theorists may need to incorporate to some extent". This is also consistent with findings from recent sustainability studies in Sri Lanka that managers' belief sets (mostly with a Buddhist background) shape their perception and attitudes to engage in sustainability practices, such as sustainability reporting (Thoradeniya et al., 2015), and strategic corporate social responsibility (Perry et al., 2015).

Use of sustainability control systems in strategic responses to institutional pressures for sustainability

The discussion below elaborates whether and how AMO responded to institutional pressures for sustainability, and if so, whether and how AMO used different sustainability control systems tools in supporting such strategic responses.

Acquiescence responses: It is evident that the acquiescence strategies were driven by AMO's intention to follow sustainability practices, largely supported by the Board's sustainability commitment, top management's sustainability philosophy, and values of sustainability culture. AMO was largely influenced by leading customers to imitate their sustainability best practices in order to meet global standards. In order to respond to these pressures, AMO was mostly using compliance tactics, and in many situations, over-complying with institutional demands, such as regulatory conditions, voluntary requirements, and customers' sustainability mandates. AMO provides evidence to support that compliance strategy in the sustainability context is not mere acceptance of institutional pressures for sustainability, but rather it reflects rational strategic choices. This is consistent with Thoradeniya et al.'s (2015) contention that top managements' philosophy and perceptions (especially influenced by Buddhist philosophy and values) in the Sri Lankan context influence their sustainability decision making. However, somewhat differently, Perry et al. (2015, p. 737) conclude that factory managers in the Sri Lankan apparel industry "framed corporate social responsibility in terms of compliance, rather than going above and beyond regulatory requirements; seeing it as a strategic competitive imperative and less a development mechanism". This could be attributed to the fact that Perry et al. (2015) only focused on factory managers' perspective on corporate social responsibility, but not the senior strategic level managers from corporate head offices.

As depicted in Table 4-2, AMO employs a number of sustainability control systems tools in complying with institutional pressures for sustainability. Sustainability policies and planning were commonly used in complying with all three institutional pressures for sustainability. This is predictable as acquiescence to institutional pressures for sustainability requires a strong set of internal sustainability policies, upon which most of the other sustainability practices are based. For instance, most of the respondents highlighted that proper use of sustainability control systems is inevitable in implementing sustainability practices with acquiescence responses. Among the other control tools, while sustainability budgeting was employed in complying with coercive and normative pressures, sustainability KPIs were mostly employed in acquiescence responses to mimetic and normative pressures. However, it was revealed that sustainability KPIs are not relatively used in complying with coercive sustainability pressures.

Compromise responses: While AMO has attempted to respond to institutional pressures for sustainability mostly with acquiescence strategies, respondents reveal certain situations in which AMO negotiates and bargains in responding to institutional pressures for sustainability. The findings indicate that AMO compromised with some sustainability pressures representing all three institutional pressures for sustainability categories using a mix of balancing, pacifying, and bargaining tactics (Oliver, 1991). Importantly, AMO has mostly compromised with customers and government institutions in responding to coercive institutional pressures for sustainability. While Beddewela and Fairbrass (2015) reveal compromise responses to governmental organisations in Sri Lanka, such strategies were more likely to respond to normative pressures. Several situations were also found in plant-level managers' bargaining and negotiations with Board of Directors and group level managers, which is somewhat contradictory to Perry et al.'s findings (2015). However, such negotiations do not seem to have had a negative impact on customer–supplier relationships.

AMO uses several sustainability control systems tools in their compromising responses to all three types of institutional pressures for sustainability. Sustainability policies, planning and internal data collection were mostly helpful to negotiate with the Board of Investment and leading customers. For instance, Senior Manager 2 explained how the information collected through sustainability control systems would help them to negotiate in rationalizing their arguments in compromising with institutions.

We can use sustainability information [collected through MCS] to show them [Board of Investment] that we do not break the law, and future plans to bargain with them.

Importantly, in compromising with mimetic and normative institutional pressures for sustainability, plant level managers used sustainability cost benefit analysis and investment appraisal techniques to negotiate with the Board of Directors and the group level managers. Sustainability budgeting and life-cycle analysis in bargaining with mimetic institutional pressures for sustainability, and sustainability KPIs in negotiating with normative institutional pressures for sustainability were also used.

Avoidance responses: The findings show AMO's use of avoidance strategy in situations where responses to coercive and normative institutional pressures for sustainability were relatively difficult. However, the study was unable to find any situation where AMO uses avoidance strategy in responding to mimetic institutional pressures for sustainability. AMO used escape tactics in responding to the government's demand to provide sustainability related data. For instance, certain facilities at AMO escaped this demand by postponing institutional pressures for sustainability that were difficult to accommodate within AMO's capacity due to production differences and confidential information. In responding to normative institutional pressures for sustainability, AMO's employee empowerment initiatives supported plant level managers to buffer the achievement of sustainability targets as predicted by top managers and as stipulated in sustainability policies. Yet, the study did not find evidence to support concealment tactics. In contrast to Iarossi et al.'s (2013) suggestion that organisations with an expressed commitment to sustainability cannot be expected to respond using avoidance strategy, this case study provides evidence supporting the use of avoidance strategy in the sustainability context. However, it should be noted that AMO did not deviate from its expressed commitment to sustainability, but strategically accommodated sustainability demands within the organisational capacity and interests.

In supporting avoidance responses to institutional pressures for sustainability, AMO uses a number of sustainability control systems tools. As indicated in Table 4-2, while sustainability data collection was instrumental in escape and buffering tactics to both coercive and normative institutional pressures for sustainability, internal sustainability operational structure, policies and planning were mostly used in avoidance response to coercive institutional pressures for sustainability. This is consistent with Bromley and Powell's (2012, p. 509) proposition that "... avoidance is most closely linked to policy–practice decoupling because it involves symbolic conformity". Yet, somewhat differently, sustainability investment appraisals, KPIs and PMS were used by plant level managers to buffer the achievement of sustainability targets as predicted by top management and suggested by sustainability policies.

Defiance responses: The case study finds a situation where AMO has responded with defiance strategy using dismissing tactics. As AMO is only accountable for around 20% in the entire supply chain, AMO decided to dismiss one of its main customers' demand to certify that garments are free from hazardous chemicals. This strategic stance and response reinforces AMO's sustainability commitment. However, this is contradictory to the findings of Iarossi et al. (2013), in which organisational strategic decisions not to respond to institutional pressures for sustainability using defiance strategy strengthen the organisation's sustainability stance and commitment. Quite similar to the avoidance response, AMO's internal sustainability operational structure, sustainability policies and data collection facilitated the dismissing tactic.

Manipulation responses: According to Oliver (1991), the highest level of strategic response to institutional pressures is the use of manipulation strategy with co-opting, influencing, and controlling tactics. Evidence shows how AMO responded to all three types of institutional pressures for sustainability with a manipulation strategy using co-opting and influential tactics, but not the controlling tactics. Consistent with Beddewela and Fairbrass (2015), while manipulation responses were mostly in relation to regulatory pressures, AMO also used manipulation responses to demands from professional bodies. Oliver (1991) indicates that manipulating responses may be implemented using co-opting tactics through the connections of influential people, such as politicians. However, it should be noted that the consequences of AMO's manipulation responses to institutional pressures for sustainability reveal positive impacts on sustainability.

In manipulation responses to all three types of institutional pressures for sustainability, AMO often used sustainability planning, policies and internal sustainability operational structures. However, in response to mimetic institutional pressures for sustainability, sustainability investment appraisal and life-cycle analysis were also employed in project specific decisions. The analysis reveals that control mechanisms, such as the sustainability policies and planning, sustainability data collection, and internal sustainability operational structures mostly supported AMO's strategic responses to coercive sustainability pressures. Manager 1 emphasised that:

> *Since we have management control systems in place, we have all the evidence and figures, collected and recorded throughout the years. I mean from 2010 onwards all we have. We can clearly show everybody [institutional pressures] how we have done from our side. So then we can turn them to anyway support from their side as well. It's very important to have management control systems to have a big voice.*

AMO's internal environmental and social sustainability policies and strategies, and systematic data collection procedures support AMO to respond to coercive institutional pressures for sustainability with active resistant strategies. Sustainability PMS and KPIs are generally used in response to normative pressures, but not in response to coercive pressures. Sustainability budgeting is often used to support an acquiescence response to coercive pressures and normative pressures, and a compromise response to mimetic pressures. Compromise and manipulation strategic responses to mimetic pressures are generally supported by sustainability life-cycle and investment appraisal analyses, however, such control systems do not seem to support acquiescence responses for mimetic pressures. The findings suggest that AMO is more likely to use sustainability control systems in response to coercive and mimetic sustainability pressures. However, the use of sustainability control systems was relatively low in response to normative pressures, with an exception of acquiescence response, where the AMO's Board has instructed each plant to allocate a minimum of 0.5% of revenue for sustainability practices. This may be due to the strength of the coercive pressures and AMO's intention to implement and mimic group level sustainability best practices.

In conclusion, the study's findings support the assertion that AMO's strong sustainability commitment, sustainability investments in training and development, research and development, reputation for sustainable practices in the industry, and organisational size also allowed it to actively respond to institutional pressures for sustainability with the support of a number of sustainability control systems tools (Table 4-3). Findings are also consistent with prior studies that large-scale organisations are more likely to use various sustainability management tools in the decision making process (Hörisch et al., 2015). Moreover, it shows how top managers' philosophy, belief and interpretations influence AMO's choice of different strategic responses to institutional pressures for sustainability (Sharma, 2000). Contributing to the sustainability research in developing country multinational enterprises (Momin and Parker, 2013), the findings indicate that multinational enterprises that are committed to sustainability, especially in the Asian context, actively respond to institutional pressures for sustainability.

Use of sustainability control systems in strategic responses to institutional pressures for sustainability and organisational changes

By integrating Oliver's (1991) strategic responses framework, this study shows how sustainability control systems support organisational heterogeneity and practice variations in strategic responses to institutional pressures for sustainability (Lounsbury, 2008). The findings

support Lounsbury's (2008, p. 358) suggestion to "look for systematic variation in management control practices and to link such variation to broader control logics". More specifically, as discussed above, the case study shows how the use of sustainability control systems in strategic responses to institutional pressures for sustainability vary with the chosen strategy, and respective institutional pressures for sustainability. Contrary to the long standing belief that organisations tend to comply with institutional pressures, this study supports the proposition that organisations are not passive actors, but actively respond to institutional pressures (Oliver, 1991; Scott, 2001; Lounsbury, 2008). As institutional theory's focus on the institutionalization through practices has been widely criticised, this study contributes to the management control literature by incorporating Oliver's strategic responses framework to better understand the organisational practice variances in responding to institutional pressures for sustainability. The exploration of the use of sustainability control systems in strategic responses to institutional pressures for sustainability supports the proposition that institutionalization should be able to deal with the active resistance to institutional pressures, and management accounting systems support strategic changes and practice variances (Larrinaga-Gonzalez and Bebbington, 2001; Lounsbury, 2008; Ball and Craig, 2010). More specifically, Ball and Craig (2010, p. 292) suggest that "for a thoroughgoing analysis, we need to incorporate developments in wider social theory which have affinities with institutional analysis of organisational sociology". By incorporating institutional theory and strategic responses to institutional pressures framework, this study supports Lounsbury's (2008) suggestion to contribute how accounting systems shape intra-organisational dynamics, more particularly in responding to institutional pressures for sustainability. Findings also shed light on the MCS-strategy relationship that use of sustainability control systems facilitates changes in organisational strategy (Tucker and Parker, 2015).

Moreover, as proposed by Baker and Schaltegger (2015), this study contributes to the pragmatic view of social and environmental accounting by highlighting the fact that sustainability control systems support organisations to respond to institutional pressures for sustainability using a wide array of strategies ranging from acquiescence to manipulation in both successful and challenging circumstances. More specifically, Baker and Schaltegger (2015, p. 282) noted that "Pragmatic experimentation should not be based on just highlighting the successful; rather it should accept and understand failures or deficiencies as further motivation to search for interesting new ideas and improvements".

Use of sustainability control systems in strategic responses to institutional pressures for sustainability and organisational improvements

In line with the theoretical constructs of the study, the use of sustainability control systems in strategic responses to institutional pressures for sustainability not only explains organisational changes and practical dynamics, but also how it impacts organisational improvements. It was revealed that while the role of sustainability control systems was not relatively important earlier, with the formal sustainability initiatives, it now plays an important role by providing cost effective mechanisms. Manager 3 highlighted that the use of sustainability control systems in sustainability is inevitable as a cost effective mechanism as all the operational functions are now integrated.

> *I would say now it [sustainability control systems] is coming into practice. Because everything is being integrated. So when we say management systems starting from all the KPI's review to use of MIS, IT, software, and every system is now integrated. It isn't like few years back. Now we are looking into it [sustainability control systems] because it's very cost effective.*

Manager 1 also highlighted how the use of sustainability control systems helps him to identify actual cost savings instead of merely relying on suppliers' information.

> *Because we always depend on the supplier information, we need to look at once we installed that [machine] … to figure out how much the actual savings. For that we need to have management controls. Otherwise we can install and run, but we don't know what the real impact of it is and actual savings are… Having management controls systems…we can always…look at how it performs and how it behaves, what will be the savings and what will be the impact to the environment as well.*

As discussed in the case analysis, in response to one of the leading customers' demand to produce carbon neutral bras, AMO has built an environmentally friendly eco-factory. Munasinghe et al. (2016) compare a life-cycle of carbon and energy footprints between the eco-factory and a standard garment factory at AMO. Interestingly, their life-cycle analysis reveals that carbon and energy footprints of the standard factory are 23% and 15% higher than that of the eco-factory, respectively (Munasinghe et al., 2016). Sustainability team members who were involved in the life-cycle analysis emphasised that the customer (who demanded to build an eco-factory) has requested AMO to conduct a comparative life-cycle analysis and produce results to communicate their sustainability commitment to consumers. The case study indicates that organisational ability to utilise appropriate active strategies in responding to institutional pressures for sustainability strengthens sustainability practices. The study concludes that organisational success seems to be a function of strategically responding to institutional

pressures for sustainability rather than operating a business by neglecting sustainability challenges.

4.6 CONCLUSIONS

To enhance our understanding of the role of sustainability control systems in sustainability this study argues that organisations use sustainability control systems in strategically responding to institutional pressures for sustainability. More specifically, it explores (i) what forms of institutional pressures for sustainability (coercive, mimetic, and normative) can influence sustainability practices, and (ii) how organisations respond to institutional pressures for sustainability (acquiescence, compromise, avoidance, defiance, and manipulation), and (iii) how sustainability control systems supports strategic responses to institutional pressures for sustainability. The analysis shows that AMO appears to have an intrinsic and inspiring approach to sustainability. The case study suggests that AMO actively responds to institutional pressures for sustainability using acquiescence, compromise, avoidance, defiance, and manipulation strategies. The results not only reveal that formal sustainability control systems play an important role in complying with institutional pressures for sustainability, but also in more active responses, including compromise, avoidance, defiance, and manipulation.

This study contributes to institutional theory, MCS-strategy literature, and strategic responses to institutional pressures framework. The findings contribute to institutional theory by providing more detailed insights into the use of sustainability control systems in strategically responding to institutional pressures for sustainability. More specifically, the study shows how the use of sustainability control systems in strategic responses to institutional pressures for sustainability influence organisational dynamics and practical variances (Lounsbury, 2008). The use of sustainability control systems to strategically respond to institutional pressures for sustainability has important implications for sustainable improvements. In light of this, the current study extends Oliver's (1991) strategic responses to institutional pressures framework to better understand the use of sustainability control systems in strategic responses to institutional pressures for sustainability. Given the importance of the use of sustainability control systems in strategic responses to institutional pressures for sustainability, and its impact on organisational changes and sustainable improvements, it is suggested that organisations should put more effort into using sustainability control systems to make sustainability efforts a realistic activity. In doing so, this study contributes to the MCS-strategy relationship from an institutional perspective (cf. Tucker and Parker, 2015). The study also adds to the small but growing body of literature concerning the use of sustainability control systems in sustainability

management in the Asian developing country perspective. Moreover, it also provides evidence to support the proposition to integrate institutional theory to understand organisational strategy and management practices.

In addition to theoretical contributions, the findings of the study have important implications for practitioners. Managers should understand that the use of sustainability control systems in strategic responses to institutional pressures for sustainability varies depending on the nature of chosen strategy and respective institutional pressures for sustainability. Not all MCS support strategic responses to institutional pressures for sustainability equally. The choice of suitable sustainability control systems in strategic responses to institutional pressures for sustainability is important to address sustainability challenges effectively, and in turn, to achieve improved performance. Absence of proper sustainability control systems in strategic responses to institutional pressures for sustainability would lead to ad-hoc responses that would tarnish the organisational reputation and social legitimacy. The study shows the merits of top managements' understanding of the use of different sustainability control systems tools to strategically respond to institutional pressures for sustainability, instead of merely complying on an ad-hoc basis. It should be noted that top management's desire to be involved in sustainability practices sometimes might lead to investments in sustainability projects without knowing how to operationalise them. Moreover, organisational failure to adopt management practices that are capable of responding to growing institutional pressures for sustainability would result in detrimental consequences for long-term corporate performance, with negative impacts on the environment and the society at large. Given the specific buyer-supplier nature of the apparel manufacturing industry, managers should pay more attention to the selection of specific strategic responses to institutional pressures for sustainability. In particular, managers in the apparel manufacturing industry should be able to balance conflicting demands from different stakeholders between ethical outcomes and organisational efficiency, and a balance between the short and long-terms goals (e.g. Perry *et al.,* 2015). Management accountants have an important role in integrating sustainability aspects into MCS, and also there is a need for them to be involved with sustainability teams to address sustainability challenges. The study also conveys an important message for managers in Western retailers that large-scale suppliers committed to sustainability in Asia strategically respond to institutional pressures for sustainability as a means of strengthening outsourcing contracts, rather than passively accepting institutional pressures. However, Western apparel retailers should consider the appropriateness, resource availability, capacity, and practical implications before imposing sustainability pressures on apparel manufacturers, especially in developing country.

Regulators and governing bodies may also benefit from the outcomes of the study. In particular, participants expressed their concerns over the lack of strong and effective sustainability regulations, and issues related to the practical implementations of available regulations that discourage organisations that are committed to sustainability. Sustainability policy makers in Sri Lanka, such as the Central Environmental Authority, the Sustainable Energy Authority, and the Board of Investment could aid sustainability by developing national policies for sustainability practices. In addition, there is a need for them to introduce standardised and comprehensive performance measurement mechanism systems to evaluate sustainability performance, and to encourage organisations that have not yet embraced sustainability. Professional accounting bodies in Sri Lanka could support sustainability managers in this regard. Policy makers should be aware that merely imposing sustainability pressures on an organisation would not help to address sustainability challenges. In addition, industry and trade associations, such as national and international chambers of commerce can initiate education and awareness programmes to motivate their members to integrate sustainability into strategy and to implement internal control mechanisms in supporting systematic sustainable manufacturing and services. In addition, policy makers should not define active resistance from organisations as barriers to sustainability efforts, rather they should be considered as opportunities. Coordination and mutual understanding that lead to effective public-private partnerships among authorities that represent sustainability, accounting, and industry would be useful to develop effective sustainability management practices.

The study has several limitations. First, the focus of the case study is a single large-scale privately-owned organisation with an outstanding sustainability image, large-scale sustainability investments and performance in the apparel industry in Asia. However, prior studies reveal that large-scale organisations are more likely to develop and use sustainability management tools compared to small-scale organisations (Hörisch et al., 2014). Therefore, the applicability of the findings in this study to small and medium organisations should be considered carefully. Second, at the time of conducting this study, AMO only manufactured apparel for key retailers located in the West. Hence, this specific customer–supplier dependent relationship should be taken into account in interpreting institutional pressures for sustainability. Third, as the term sustainability is a broader concept that denotes an undefined number of activities, the basis of strategic responses and the usefulness of sustainability control systems may vary widely depending on the context in which organisations operate and the nature of industry. Future research may extend the proposition of this study to generalise the

findings by taking into account different contextual implications (i.e., services organisations, publicly listed companies, small and medium enterprises). Fourth, as this study only focuses on the use of formal MCS, there is a potential for model underspecification (Chenhall, 2003). Future studies may reveal whether and how organisations use informal MCS to support strategic responses to institutional pressures for sustainability. Finally, this study only reports evidence from the apparel manufacturer's perspective. Future studies may expand the study by reporting evidence from other stakeholders, including retailers, customers, consumers, regulatory bodies, and community.

Given the importance of research on sustainability, future research may examine the following propositions to further contribute to the literature in this area: (i) whether institutional pressures for sustainability are positively associated with organisational intention to integrate sustainability issues into corporate strategy; (ii) whether organisational intention to integrate sustainability issues into corporate strategy is positively associated with the design and implementation of sustainability control systems; and (iii) whether the extent to which organisations embed sustainability elements into MCS positively mediates the relationship between sustainability strategy and long-term corporate value creation. The resource based view (Barney, 1991) and Simons' (1995) levers of control framework could provide a sound theoretical platform to examine these propositions using quantitative approaches. Moreover, it is suggested that future researchers in sustainability management and accounting examine further the proposition in this study using institutional logics, actor network theory, or practice theory (see Lounsbury, 2008).

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APPENDIX 1: DOCUMENTS ANALYSED IN THE STUDY

Document type	Year	No. of pages
UNGC Communication on Progress Report	2004–2005	20
UNGC Communication on Progress Report	2005–2006	20
UNGC Communication on Progress Report	2006–2007	26
UNGC Communication on Progress Report	2008	48
UNGC Communication on Progress Report	2009	32
UNGC Communication on Progress Report	2010	32
UNGC Communication on Progress Report	2011	41
UNGC Communication on Progress Report	2012	59
UNGC Communication on Progress Report	2013	71
UNGC Communication on Progress Report	2014	121
UNGC Communication on Progress Report	2015	85
Sustainability news magazine (Internal)	Aug 2011	20
Sustainability news magazine (Internal)	Nov 2011	20
Sustainability news magazine (Internal)	Feb 2012	20
Sustainability news magazine (Internal)	May 2012	20
Sustainability news magazine (Internal)	Aug 2012	20
Sustainability news magazine (Internal)	June 2013	24
AMO sustainability case study by [WB bank]	2007	8
AMO sustainability case study by [XYZ research institute]	2006	29
AMO sustainability case study by [XYZ research institute]	2008	26
AMO research report by [PQR research institute]	2013	52
AMO sustainability case study by [HC cement company]	2008	86
AMO sustainability case study by [HC cement foundation for sustainable construction]	2009	90
AMO sustainability report by [WB business magazine]	2006	4
AMO eco-factory statistics by [ABC solar company]	2008	2
AMO eco-factory [report by AMO sustainability manager]	2009	6
AMO eco-factory [interview by AMO sustainability manager]	2010	12
AMO web archives and press releases	2003–2014	69
Sustainability policies (confidential documents)	2013	Viewed and extracted
Sustainability strategic plans and reviews (confidential documents)	2013	Viewed and extracted
Environmental performance evaluation reports (confidential documents)	2010–2013	Viewed and extracted
Sustainability organisational structures and procedures (confidential documents)	2013	Viewed and extracted

APPENDIX 2: DATA TREE NODES

1. Existing sustainability practices
    1.1 Economic
    1.2 Environmental
    1.3 Social
2. Institutional pressures for sustainability
    2.1 Coercive
        2.1.1 Regulatory bodies
        2.1.2 Transnational organisations
        2.1.3 Customers
        2.1.4 Board directors
    2.2 Mimetic
        2.2.1 Competitors
        2.2.2 Multinational corporations
        2.2.3 Group level best practices
        2.2.4 Forums and experts
    2.3 Normative
        2.3.1 Top management philosophy
        2.3.2 Organisational policies
        2.3.3 Professional bodies
3. Strategic responses to institutional pressures
    3.1 Acquiescence
        3.1.1 Habit
        3.1.2 Imitate
        3.1.3 Comply
    3.2 Compromise
        3.2.1 Balance
        3.2.2 Pacify
        3.2.3 Bargain
    3.3 Avoidance
        3.3.1 Escape
    3.4 Defiance
        3.4.1 Dismiss
    3.5 Manipulation
        3.5.1 Co-opt
        3.5.2 Influence
4. Formal management control systems
    4.1 Specifying and communicating objectives
        4.1.1 Internal sustainability operational procedures
        4.1.2 Sustainability planning
        4.1.3 Sustainability policies
    4.2 Monitoring performance (Feedback /control)
        4.2.1 Sustainability data collection
        4.2.2 Sustainability investment appraisal
        4.2.3 Sustainability budgeting
        4.2.4 Sustainability life-cycle assessments
    4.3 Performance measurement systems
  4.3.1 Sustainability PMS
5. Organisational changes
6. Organisational improvements

Chapter 5 : PAPER TWO

PROACTIVE SUSTAINABILITY STRATEGIES AND CORPORATE SUSTAINABILITY PERFORMANCE: THE MEDIATING EFFECT OF SUSTAINABILITY CONTROL SYSTEMS*

ABSTRACT

This study examines the mediating effect of sustainability control systems on the relationship between proactive sustainability strategies and corporate sustainability performance. Data were collected from top managers in 175 multinational and local corporations operating in Sri Lanka and analysed using Partial Least Squares Structural Equation Modeling. The study finds that sustainability control systems only partially mediate the relationship between proactive sustainability strategies and corporate sustainability performance. The mediating effect of sustainability control systems is examined under three sustainability strategies, where environmental and social strategies reveal a partial mediation, and economic strategy shows no mediation.

Keywords: Proactive sustainability strategy; Sustainability control systems; Corporate sustainability performance

5.1 INTRODUCTION

Corporate responsiveness towards sustainability issues has been intensively influenced by growing internal and external sustainability concerns, such as regulatory pressures, increasing sense of social and ethical responsibility of top management, new business opportunities, and cost factors such as a carbon tax (Bansal and Roth, 2000; González-Benito and González-Benito, 2006; Brammer et al., 2012). Researchers argue that managers proactively integrate sustainability issues into strategy rather than merely complying with regulatory requirements (e.g. Hart, 1995; Sharma and Vredenburg, 1998; Christmann, 2000; Aragón-Correa and Rubio-Lopez, 2007; Alt et al., 2015; Bhupendra and Sangle, 2015). Theoretically, proactive sustainability strategies[17] improve corporate sustainability performance in terms of efficient use of resources, increased cost advantage, reduced waste and discharge, promotion of social reputation, improved customer preferences, and generation of new innovative capabilities (e.g. Judge and Douglas, 1998; Sharma and Vredenburg, 1998; Christmann, 2000; Banerjee, 2001; Clarkson et al., 2011; Bhupendra and Sangle, 2015). However, despite the increasing importance and perceived benefits of proactive sustainability strategies to address sustainability challenges, researchers have provided little empirical evidence about the managerial processes that translate proactive sustainability strategies into corporate sustainability performance (e.g. Arjaliès and Mundy, 2013; Lisi, 2015). This study examines to what extent corporations use sustainability control systems[18] to translate proactive sustainability strategies into corporate sustainability performance. Essentially, do the systems put in place to deliver on well-meant sustainability strategies result in sustainability outcomes.

Sustainability control systems are a part of environment management accounting[19] and a specific application of management control systems[20] (MCS). The use of sustainability control systems not only helps top management to implement proactive sustainability strategies by disseminating sustainability core values and measuring sustainability performance, but also to

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[17] Aragón–Correa and Rubio-Lopez (2007, p. 358) identify 'proactive environmental strategy' as the "systematic patterns of voluntary practices that go beyond regulatory requirements". Referring to Torugsa et al. (2013), this study uses the term 'proactive sustainability strategies' including all three sustainability dimensions: environmental, economic, and social.

[18] This study uses the terms 'sustainability control systems' (Gond et al., 2012), and 'eco-control' (Henri and Journeault, 2010) interchangeably.

[19] Environmental management accounting is defined as "the management of environmental and economic performance through the development and implementation of appropriate environmental related accounting systems and practices" (IFAC, 1998, p. 3).

[20] MCS refer to "formal, information-based routines and procedures managers use to maintain or alter patterns in organisational activities" (Simons, 1995, p. 5).

minimise sustainability strategic risks and to avoid uncertainties associated with sustainability strategies (Henri and Journeault, 2010; Gond et al., 2012; Arjaliès and Mundy, 2013; Rieckhof et al., 2015; Kerr et al., 2015). Looking beyond the proactive sustainability strategies implementation, the use of sustainability control systems also enable corporations to manage sustainability threats and opportunities, and to respond to stakeholders' sustainability demands by enhancing the transparency and accountability of operational activities (Arjaliès and Mundy, 2013).

The extent to which corporations use sustainability control systems to enable the implementation of proactive sustainability strategies is theoretically underpinned by the natural-resource-based view (NRBV) of the firm (Hart, 1995) and the levers of control framework (Simons, 1995). The rationale behind the NRBV of the firm is that the extent to which corporations integrate the natural environment into strategic processes leads to sustainable competitive advantage (Hart, 1995). However, 15 years after the introduction of this proposition, Hart and Dowell (2011, p. 1470) emphasise that "the academic literature on the link between sustainable development strategies and firm performance is virtually non-existent". This raises concerns not only about what matters between proactive sustainability strategies and corporate sustainability performance, but also how to build the relationship. Simons' (1995) levers of control framework facilitates top management to implement proactive sustainability strategies by revealing this missing link.

To examine the empirical validity of the extent to which sustainability control systems facilitate the proactive sustainability strategies, in the context of a developing Asian economy, data were collected from top managers in 175 multinational and local corporations representing both manufacturing and service sectors operating in Sri Lanka. Prahalad and Hart (2002) argue that corporations operating in the developing country context have enormous opportunities not only to make their own fortune, but also to eradicate poverty and enhance livelihoods by implementing sustainable development strategy. The results are based on Partial Least Squares Structural Equation Modeling (PLS-SEM) and reveal that at present sustainability control systems explain around 20% of the relationship between proactive sustainability strategies and corporate sustainability performance, revealing a partial mediation.

The examination of the use of sustainability control systems to implement proactive sustainability strategies addresses several important limitations in the current literature and practice. First, the lack of formal managerial processes to implement proactive sustainability

strategies is a major impediment for corporations to achieve corporate sustainability performance. Top management may well be interested in investing in sustainability projects without knowing how to execute them. Potentially this increases environmental cost and risk, generates no clear payoffs, and also decreases customer satisfaction by not being able to provide innovative products and services, such as environmentally friendly green products (Aragón-Correa and Rubio-Lopez, 2007; Nidumolu et al., 2009; Epstein and Buhovac, 2014). A significant reason for poor outcomes in achieving corporate sustainability performance is that the motives of top management to proactively incorporate sustainability strategies often disregard important internal (analysis, selection/implementation and control) and external (uncertainty, complexity and munificence) contextual factors, which can mediate or moderate the relationship between proactive sustainability strategies and corporate sustainability performance (Aragón-Correa and Sharma, 2003; Aragón-Correa and Rubio-Lopez, 2007). Consequently, the failure to use formal managerial processes to implement proactive sustainability strategies has even caused negative consequences for corporate sustainability performance, resulting in a conflicting relationship (e.g. Wagner et al., 2002; Thornton et al., 2003; Wagner and Schaltegger, 2004; González-Benito and González-Benito, 2005). The study proposes that the extent to which corporations use sustainability control systems enables them to translate proactive sustainability strategies into corporate sustainability performance.

Second, while the role of environmental management accounting in sustainable development has been growing as a young discipline over the last two decades (Schaltegger et al., 2013), relatively little is known about the role of sustainability control systems to implement sustainability strategy. Popular themes in environmental management accounting include: the impact of eco-control and environmental and economic performance (Henri and Journeault, 2010; Lisi, 2015); environmental cost management, including material flow cost accounting (Figge and Hahn, 2004; Rieckhof et al., 2015; Henri et al., 2014, 2015); environmental and sustainability performance measurement practices (Epstein, and Roy, 2001; Dias-Sardinha et al., 2002; Schaltegger and Wagner, 2006; Henri and Journeault, 2008; Dutta and Lawson, 2009; Virtanen et al., 2013); institutional changes and adoption of environmental management accounting (e.g. Larrinaga-Gonzalez and Bebbington, 2001; Contrafatto and Burns 2013); environmental disclosures and reporting (e.g. Adams and McNicholas, 2007; Bouten and Hoozée, 2013; Kerr et al., 2015); environmental accounting and the accounting profession (e.g. Wilmshurst and Frost, 2001; De Moor and Beelde, 2005); and the role of MCS in social responsibility decision making (Norris and O'Dwyer, 2004; Durden, 2008). The few existing sustainability control systems studies in sustainability strategy have largely focused on the

design characteristics of sustainability control systems in the strategic process (e.g. Epstein and Wisner, 2005; Durden, 2008; Perego and Hartmann, 2009; Riccaboni and Leone, 2010; Pondeville et al., 2013; Rodrigue et al., 2013); however, they provide limited attention to the use of sustainability control systems to implement sustainability strategy (e.g. Adams and Frost, 2008). Whereas past sustainability control systems literature has largely focused on design characteristics of sustainability control systems and overlooks the use of sustainability control systems to implement sustainability strategy, the study uses the levers of control framework and provides empirical evidence to support the use of sustainability control systems to implement proactive sustainability strategies.

Third, the majority of prior studies on the relationships amongst proactive sustainability strategies, sustainability control systems, and corporate sustainability performance focus on individual aspects of sustainability strategy and performance (mostly environmental strategy, environmental and economic performance; e.g. Russo and Fouts, 1997; Sharma and Vredenburg, 1998; Lisi, 2015). While the studies based on a piecemeal approach are essential for the development of the discipline and to provide deeper insights, such an approach is less likely to provide a comprehensive view of corporate sustainable development. The study provides empirical evidence and a comprehensive view of sustainable development and attempts to resolve previous conflicting findings between proactive sustainability strategies and corporate sustainability performance.

Fourth, while most of the current sustainability strategy and sustainability control systems studies contribute to our understanding of the issues, most are qualitative, conceptual, and based on developed economies (e.g. Gond et al., 2012; Arjaliès and Mundy, 2013; Rieckhof et al., 2015; Kerr et al., 2015). Only a few are quantitative and based on surveys (Dias-Sardinha et al., 2002; Epstein and Wisner, 2005; Epstein and Roy, 2007; Perego and Hartmann, 2009; Ballou et al., 2012). Crutzen and Herzig (2013) claim that this strand of literature has largely neglected the Asian context and emerging economies. This raises two concerns: (i) the generalisability of the use of sustainability control systems in sustainability strategy implementation (cf. Crutzen and Herzig, 2013); and (ii) the applications of the NRBV of the firm in the developing country context (Chan, 2005; Hart and Dowell, 2011). From the theoretical point of view, while the past sustainability control systems studies use traditional theories, such as institutional theory, legitimacy theory, contingency theory, agency theory, and stakeholder theory (e.g. Durden, 2008; Länsiluoto and Järvenpää, 2008; Perego and Hartmann, 2009; Pondeville et al., 2013), the resource-based view of the firm has largely been ignored (cf. Crutzen and Herzig, 2013).

The quantitative study integrates sustainability control systems applications within the NRBV of the firm, and provides empirical evidence from the developing country context to support sustainable development efforts (Prahalad and Hart, 2002; Hart and Dowell, 2011).

The study is organised as follows. Section 2 presents the research framework, underlying theoretical concepts, and hypothesis. Section 3 discusses the survey design, data collection, and measurement scales. Section 4 presents the analyses and results. Finally, section 5 provides a discussion and conclusion, followed by suggestions for future research.

5.2 BACKGROUND LITERATURE AND HYPOTHESIS DEVELOPMENT

Figure 5-1 illustrates the research framework. The study hypothesises that sustainability control systems mediate the relationship between proactive sustainability strategies and corporate sustainability performance. The framework for the empirical analyses includes four models: one model examines proactive sustainability strategies and corporate sustainability performance by integrating all three sustainability dimensions, and three models examine environmental, economic and social sustainability strategy and performance separately.

FIGURE 5-1 FRAMEWORK OF THE STUDY
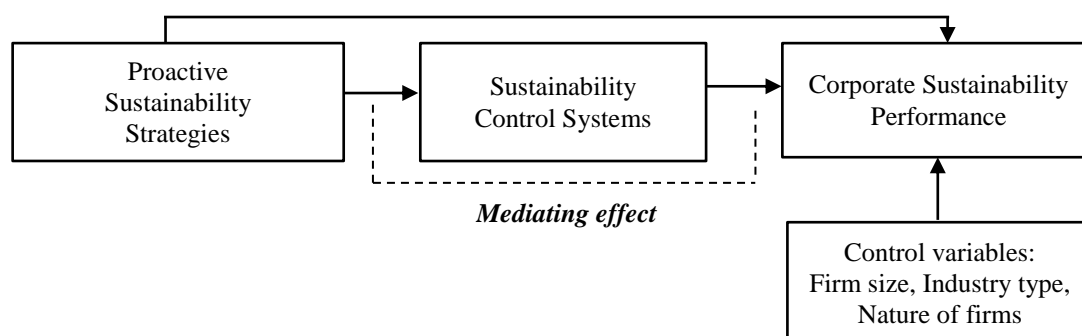
5.2.1 Proactive sustainability strategy and corporate sustainability performance: a natural resource-based view perspective

The resource-based view of the firm suggests that internal resources and capabilities that are rare, valuable, inimitable and non-substitutable lead to sustainable competitive advantage (Barney, 1991). Hart (1995) proposes the NRBV of the firm by highlighting the limitations of the resource-based view to capture the resources and capabilities that lead to competitive advantage when corporations interact with the natural environment. Specifically, Hart (1995, p. 991) emphasises that "it is likely that strategy and competitive advantage in the coming years will be rooted in capabilities that facilitate environmentally sustainable economic activity – a natural-resource-based view of the firm". The NRBV of the firm proposes three interconnected

strategies that lead to sustainable competitive advantage: pollution prevention, product stewardship, and sustainable development (Hart, 1995).

Pollution prevention strategy aims to prevent waste and emissions during the production process instead of cleaning at the end, which eventually associates with reducing product and service costs (Hart, 1995; Hart and Dowell, 2011). Product stewardship strategy expands the pollution prevention strategy to the entire product life-cycle, including stakeholders. Product stewardship creates sustainable competitive advantage by strategically preventing the negative impacts of environmental concerns (Hart, 1995; Hart and Dowell, 2011). Sustainable development strategy, which includes environmental, economic and social sustainability strategy, focuses on maintaining environmentally friendly production processes for an indefinite future (Hart, 1995; Hart and Dowell, 2011). In particular, this strategy aims at implementing sustainability strategy that benefits stakeholders in less developed countries and contributes to the product life-cycle by various means (Hart, 1995; Hart and Dowell, 2011). Hart (1995, p. 997) claims that "firms (either multinational or local) that are focused on generating short-term profits at the expense of the environment are therefore unlikely to establish long-term positions in the developing world".

Following Torugsa et al. (2013), the study investigates proactive sustainability strategies in terms of environmental strategy, economic strategy and social strategy, which include all three above strategies. Environmental strategy assures that human activities should not harm land, air and water resources (Bansal, 2005; Torugsa et al., 2013). Corporations implement environmental management strategy in order to reduce the size of their ecological footprint by integrating environmental issues into operations (Steurer et al., 2005; Torugsa et al., 2013). Economic strategy includes the "creation and distribution of goods and services … to raise the standard of living around the world" (Bansal, 2005, p. 198). According to Steurer et al. (2005), economic sustainability strategy includes financial performance and long-term competitiveness. Value creation is a function of products and services, and thus, the effectiveness and efficiency of products or services improve created value. Social strategy ensures the equal rights of members of society to access resources and opportunities (Bansal, 2005; Torugsa et al., 2013). Aspects of social sustainability strategy include equality within the corporation, international equity, internal social improvements and external social improvements (Steurer et al., 2005). Referring to Bansal (2005), corporate sustainability performance is recognised as the outcome of these three proactive sustainability strategies.

proactive sustainability strategies positively influences corporate sustainability performance in terms of cost advantage (Christmann, 2000), enhanced competitiveness through unique capabilities (Sharma and Vredenburg, 1998; Bhupendra and Sangle, 2015), enhanced reputation (Fowler and Hope, 2007), manufacturing and environmental performance (Klassen and Whybark, 1999), creation and acquisition of new competencies (Marcus and Geffen, 1998), financial and environmental performance (Judge and Douglas, 1998; Clarkson et al., 2011), waste reduction and cost savings, quality improvements in product and process (Banerjee, 2001), and competitive advantage (Porter and Kramer, 2006). However, some recent studies reveal negative and neutral impacts between these relationships. For instance, Bansal (2005) finds a negative relationship between financial performance as a control variable and sustainable corporate development. Similarly, Wagner and Schaltegger (2004) conclude positive, negative and neutral effects of shareholder value-oriented strategies on environmental and economic performance and competitiveness. While Thornton et al. (2003) reveal inconsistent relationships between environmental performance and profitability of the parent company, Wagner et al.'s (2002) study suggests that the relationship between environmental and economic performance is uniformly negative. Concluding that environmental proactivity produces negative consequences, González-Benito and González-Benito (2005) argue that the relationship should be disaggregated into specific relationships. The conflicting relationship between proactive sustainability strategies and corporate sustainability performance emphasises the necessity of further investigating the use of sustainability control systems to translate proactive sustainability strategies into corporate sustainability performance.

5.2.2 Sustainability control systems, strategy and performance

An important assumption in the MCS literature is that corporations should adapt MCS in line with strategic directions and priorities (Ittner and Larcker, 1997; Langfield-Smith, 1997; Henri, 2006; Kober et al., 2007). Wruck and Jensen (1994) argue that the emphasis given to strategies should also be reflected in MCS to support decision making and motivate employees' contribution to the implementation of strategy. The alignment between strategy and MCS facilitates the implementation of strategy and achievement of strategic objectives by mitigating risks and uncertainties, which eventually leads to improved corporate performance (Ittner and Larcker, 1997).

While the traditional finance focused MCS play a critical role in implementing organisational strategies (e.g. Simons, 1995; Ittner and Larcker, 1997; Langfield-Smith, 1997; Henri, 2006), researchers argue that MCS also have an important role in overcoming

complexities associated with implementing sustainability strategies (Schaltegger and Wagner, 2006; Gond et al., 2012; Arjaliès and Mundy, 2013; Crutzen and Herzig 2013; Epstein and Buhovac, 2014). Epstein and Roy (2001, p. 593) propose that "the alignment of strategy, structure, and management systems are essential for companies to both coordinate activities and motivate employees towards implementing a sustainability strategy". Perego and Hartmann (2009) find that the environmental strategy affects the performance measurement systems through financial quantification and sensitivity of managerial actions. Pondeville et al. (2013) reveal that corporations with considerable ecological environmental uncertainties are less likely to develop a proactive environmental strategy, environmental information systems, or formal environmental MCS. However, proactive environmental corporations are more likely to develop environmental MCS. Rodrigue et al. (2013) suggest that the stakeholders' influence on environmental strategy also impacts the selection of environmental performance indicators. Accordingly, this study predicts that the extent to which corporations integrate sustainability issues into strategy is positively associated with the use of sustainability control systems (cf. Langfield-Smith, 1997, Chenhall, 2003; Perego and Hartmann, 2009).

Sustainability control systems assist managerial decision making by identifying, collecting, and analysing financial and non-financial information about sustainability concerns associated with corporations' operating activities. Well-designed sustainability control systems may facilitate corporations to specify and communicate sustainability objectives, monitor sustainability performance through feedback and controls, and motivate employees to participate in sustainability projects and practices by rewarding and appraising their sustainability achievements. Past research provides empirical evidence to support a positive impact of the use of sustainability control systems on corporate sustainability performance (e.g. Judge and Douglas, 1998; Wisner et al., 2006; Henri and Journeault, 2010; Henri et al., 2014; Lisi, 2015). From the sustainability strategy perspective, sustainability control systems support corporations to achieve improved corporate sustainability performance by strengthening the alignment amongst business strategy, sustainability strategy and respective value drivers (cf. Henri and Journeault, 2010). Arjaliès and Mundy (2013) claim that sustainability control systems enable top management to achieve sustainability strategic objectives by identifying and managing threats and opportunities involved with corporate social responsibility strategy and forming risk management practices. Accordingly, this study predicts that the extent to which corporations use sustainability control systems is positively associated with corporate sustainability performance.

5.2.3 Strategic role of sustainability control systems: a levers of control perspective

Levers of control, namely belief systems, boundary systems, diagnostic control systems and interactive control systems, demonstrate how top management utilises MCS to manage strategic elements of core values, risks to be avoided, performance evaluations and strategic uncertainties (Simons, 1995, 2000). Simons (1995) emphasises that the maximum utilisation of the levers of control depends on the corporations' ability to simultaneously use the four levers together rather than individually. The study uses levers of control because these control elements have received more attention not only in strategy in general, but sustainability strategy in particular. For instance, levers of control is used to integrate sustainability into strategy (Gond et al., 2012); to explore how corporations use MCS to drive strategic renewal and trigger corporations' change while supporting corporate social responsibility strategy (Arjaliès and Mundy, 2013); to examine how managers perceive stakeholder influence on the choice of internal environmental performance indicators (Rodrigue et al., 2013); to analyse the implementation of resource efficient strategy by integrating material flow cost accounting (Rieckhof et al., 2015); and to explore how corporations integrate triple bottom line reporting within internal MCS in the social responsibility strategy implementation (Kerr et al., 2015). Nevertheless, current studies do not provide empirical evidence to support the extent to which corporations use levers of control to facilitate proactive sustainability strategies, and its impact on corporate sustainability performance.

Simons (1995, p. 34) proposes belief systems as "the explicit set of organisational definitions that top managers communicate formally and reinforce systematically to provide basic values, purpose, and direction for the corporation". Formal belief systems that communicate corporations' values, purposes and future directions, for example, include vision and mission statements, credos, and statement of purpose (Simons, 1995, 2000). Belief systems that view strategy as a perspective ensure employees' commitment towards common goals and enable them to seek new opportunities (Widener, 2007; Mundy, 2010; Arjaliès and Mundy, 2013). Corporations can incorporate long-term sustainability strategic objectives into belief systems to communicate commitment to broader stakeholder groups (Arjaliès and Mundy, 2013; Kerr et al., 2015).

According to Simons (1995, p. 39), boundary systems "delineate … the acceptable domain of strategic activity for organisational participants". Boundary systems aim to avoid various risks associated with strategy implementation by imposing limits and boundary conditions on employees' opportunity seeking practices (Simons, 1995; Widener, 2007;

Mundy, 2010; Kruis et al., 2015). Communicated through codes of conduct, strategic planning systems, and operational systems, boundary systems allow freedom for employees to innovate and achieve objectives within a particular predefined context (Widener, 2007; Kruis et al., 2015). As inspirational beliefs are too vague, employees should be informed what to do and need to be accountable (Simons, 2000). According to Simons (2000 p. 278), managers can avoid employees' opportunistic behaviour by "(i) creating shared belief and mission, (ii) setting challenging goals, (iii) linking incentives to accomplishment, and (iv) declaring certain actions off-limits" in order for employees' involvement to be creative, but safe. In the sustainability context, for instance, corporations can use boundary systems to communicate activities that employees are authorised to carry out to minimise waste of valuable resources (Arjaliès and Mundy, 2013). Corporations can also integrate liabilities associated with ignoring sustainability compliances into internal reports, create external and internal frameworks, such as voluntary compliances, codes of conducts, and legal standards as boundary conditions to avoid sustainability risks (Arjaliès and Mundy, 2013; Kerr et al., 2015).

Simons (1995) indicates that by using pre-set standards top management employs diagnostic control systems as formal feedback practices of performance evaluation for motivating, monitoring, and rewarding employees. Diagnostic controls provide an expectation that employees will accomplish and comply with tasks to achieve corporations' objectives (Widener, 2007; Kruis et al., 2015). While mechanisms such as business plans, budgets, smart goal setting systems, project monitoring systems, and strategic planning are often utilised as diagnostic controls, top management's understanding of critical performance evaluation influences the design of diagnostic control systems (Widener, 2007; Kruis et al., 2015). Corporations design diagnostic control systems to monitor variance of critical performance elements by ensuring that (i) critical performance variables have been analysed and identified, (ii) appropriate goals have been set, and (iii) feedback systems are adequate to track performance (Simons, 2000). Performance evaluation of sustainability projects and activities is critical for corporations to achieve sustainability goals. The absence of sustainability key performance indicators may undermine the importance of sustainability activities compare to mainstream financial operational measures (Gond et al., 2012). Corporations should design performance evaluation mechanisms to measure both internal (e.g. cost) and external (e.g. compliances) sustainability achievements to satisfy employees and broader stakeholder groups (Gond et al., 2012; Arjaliès and Mundy, 2013; Kerr et al., 2015).

Top management uses interactive controls to focus attention and enhance dialogue and learning amongst employees as a means of minimising uncertainties and identifying opportunities associated with strategy (Simons, 1995). Top managers consider interactive controls as regular personal involvement with employees' decision activities (Simons, 1995, 2000). In comparison with diagnostic control systems, interactive controls create a platform for top managers to (i) actively participate in strategic tasks, (ii) strategically position in rapidly changing markets, and (iii) predict potential strategic opportunities while emphasising existing strategic priorities to junior management (Simons, 1995; Widener, 2007). Top management can also use interactive controls in the sustainability context by integrating views from external stakeholders about potential sustainability strategic priorities and by receiving feedback to monitor current strategy (Gond et al., 2012). Sustainability can also be integrated into interactive controls to enhance sustainability learning capabilities amongst employees to strengthen strategic priorities.

5.2.4 The mediating effect of sustainability control systems

Belief Systems: Top management can integrate sustainability objectives into core values to reflect strategic perspectives, motivations and responsibilities towards customers, employees, local communities, and all stakeholders at large (Norris and O'Dwyer, 2004; Jollands et al., 2015). Sustainability core values guide, encourage, and inspire commitment towards the sustainability goals through proactive sustainability strategies which otherwise cannot suffice using rules and policies alone. While examining core values as a management control, Jollands et al. (2015) find that sustainability core values help corporations to step forward and take effective actions in achieving sustainability objectives. In order to make proactive sustainability strategies realistic, Hart (1995) suggests that it is essential for corporations to communicate a shared vision not only within the corporations, but amongst the broader stakeholders. Communicating a sustainability vision will help to get a consistent picture of stakeholders' interests and intentions about a corporation's sustainability commitment (Aragón-Correa and Rubio-Lopez (2007). Supporting this view, Epstein and Buhovac (2014, p. 74) propose that "a corporate sustainability mission and vision statements should be adopted to convey the corporate commitment throughout the corporation". Corporations' ability to integrate sustainability core values into mission facilitates them to strategically address sustainability pressure rather than reacting on an ad hoc basis (Porter and Kramer, 2006). Thus, belief systems have a critical role in implementing proactive sustainability strategies by supporting the dissemination of sustainability core values (Arjaliès and Mundy, 2013; Kerr et al., 2015).

Boundary Systems: The implementation of proactive sustainability strategies is associated with various internal and external risks, such as poor quality of products and processes, overuse of valuable resources, and non-compliance with health and safety standards. As a way of avoiding sustainability strategic risk, top management can integrate sustainability practices and principles into internal structures and decision-making policies (Bansal, 2005; Arjaliès and Mundy, 2013). They can also define specific tasks to be performed by employees within the strategic process, and delegate responsibilities and authorities to capable employees (Epstein and Roy, 2001; Haugh and Talwar, 2010). Hart (1995, p. 1000) argues that "in firms that do not have well-developed quality management processes, there could be barriers to implementing pollution prevention". Kerr et al. (2015) find that corporations use strategic boundary systems as quality management systems, for instance, maintaining zero environmental incidents, zero lost time injuries, ISO 14001 systems, and compliances with resource consents as a way of minimising sustainability strategic risks. However, Aragón-Correa and Rubio-Lopez (2007) contend that the effectiveness of using these standards as a source of differentiation depends on the credibility of standards and stakeholder confidence, such that the certification becomes the objective in itself and, not just a marketing label.

Corporations may also face various sustainability risks from stakeholders, such as increasing demands for transparent and visible business operations, disclosure of compliances, and sustainability reporting. Hart (1995) suggests that corporations should also comply with voluntary codes of conduct to reveal to stakeholders that the corporation commits to sustainability. As suggested by Arjaliès and Mundy (2013), corporations can comply with internal and external voluntary guidelines ranging from international agreements and industry codes, and professional codes to corporation specific codes (e.g. Global Reporting Initiative, Eco-management and Audit Scheme, UN Code of Conduct on Transnational Corporations, and OECD Guidelines for Multinational Enterprises). The extent to which corporations integrate sustainability into boundary systems may support the implementation of proactive sustainability strategies within the corporate scope and strategic boundaries.

Diagnostic Control Systems: The success of any strategy can only be realised if performance is clearly observed and measured. Diagnostic control systems can support the implementation of proactive sustainability strategies by defining sustainability goals through pre-set standards, planning effective resource allocations, effective output measures, and by linking incentives to sustainability goal achievement. Aragón-Correa and Rubio-Lopez (2007 p. 376) emphasise that "environmental proactivity requires a fully controlled approach covering

different dimensions, including short and long-term performance consequences'. They suggest that the success of proactive sustainability strategies depends on the corporations' ability to exclude environmental cost by efficient investments in environmental projects. Therefore, evaluating the adequacy of the internal resources and capabilities is fundamental to the implementation of proactive sustainability strategies (Aragón-Correa and Rubio-Lopez, 2007).

Kerr et al. (2015) find that corporations use Balanced Scorecard and triple bottom line reporting as a diagnostic control system to measure sustainability performance including environment management systems, risk reports, health and safety, and green measures. Sustainability committed leading corporations have also been employing operational practices, such as life-cycle assessment and social audits to assess environmental impacts of operations (Epstein and Roy, 2001). Beyond the financial measures, managers can also use non-financial measures to monitor and control sustainability performances using sustainable performance measurement systems (Dias-Sardinha et al., 2002). Moreover, incentives and rewards based on multidimensional systems can be established to appreciate, encourage, and evaluate achievements in integrating sustainability performance of divisions, facilities, and individuals (Epstein and Roy, 2001). However, underdeveloped key performance indicators are often barriers to integrating sustainability into control systems (Adams and McNicholas, 2007). While a challenging task, a corporation's ability to measure sustainability performance and diagnostic-based corrective actions on pre-set standards may lead to goal achievements.

Interactive Control Systems: proactive sustainability strategies is often involved with various strategic uncertainties as such strategy brings new risks and opportunities to the corporation (Schaltegger and Burritt, 2010). Gond et al. (2012) propose that corporations may use interactive control systems to trigger sustainability learning and stimulate sustainability strategic renewal. Haugh and Talwar (2010) suggest four ways to enhance employees' awareness and interactions with sustainability: (i) sustainability learning should not be restricted to top management as it is a corporation wide requirement; (ii) collaborative programmes promoting sustainability should connect all areas of the corporation; (iii) sustainability learning procedures should focus on both knowledge and practical aspects; and (iv) the sustainability learning cycle should be able to address prospects for social learning and development of learning systems for an efficient integration into long-term strategy. While allocating enough time and resources for sustainability training courses and workshops is important, tools such as annual reports, booklets, intranet and the internet can also be used to deliver the importance of sustainability internally and externally by encompassing a wider

range of stakeholders (Haugh and Talwar, 2010). Moreover, managers can also use interactive controls to incorporate views from external stakeholders, such as communities, NGOs and investors to uncover strategies that are not focused on by internal groups and to receive feedback to promote existing strategy (Arjaliès and Mundy, 2013). Kerr et al. (2015) find that managers use the Balanced Scorecard and triple bottom line as interactive control systems in a sustainability context to interact with subordinates in preparing sustainable development reports, performance reviews, building relationships with stakeholders, such as investors, government authorities, managers for environment health and safety, risk and partner relations and corporate affairs.

Interactive control systems may also support top management in communicating sustainability information related to changes in innovative technologies, growing customer demands for sustainability products, suppliers' compliance with sustainability standards, competitors' sustainability strategies, and employees' sustainability skills. Hart and Dowell (2011, p. 1468) emphasise that "managerial attention and the framing of environmental issues have also been identified as affecting firms' abilities to profitability enact environmentally proactive strategies. The NRBV suggests that these factors are vital in developing a sustainable development strategy". However, the way corporations recognise the interactions with the natural environment as a threat or opportunity is considerably influenced by the managers' and employees' cognitive framing of environmental issues (Tenbrunsel et al., 2000). Furthermore, cross functional coordination within the corporation and the top management's continued support are also important determinants in developing environmentally friendly new products (e.g. González-Benito and González-Benito, 2006; Aragón-Correa and Rubio-Lopez, 2007). By recognising strategy as patterns of action to avoid strategic uncertainties, interactive control systems play an important role in proactive sustainability strategies implementing process. Accordingly, each aspect of the four levers of control has a critical role in supporting proactive sustainability strategies as a means of achieving corporate sustainability performance. The hypothesis to support the above proposition is:

Hypothesis: *The relationship between proactive sustainability strategies and corporate sustainability performance is positively mediated by sustainability control systems.*

5.3 SAMPLE AND DATA COLLECTION

A survey was distributed to 700 large-scale multinational enterprises and local corporations in Sri Lanka which are most likely to implement proactive sustainability strategies and formal

MCS (Henri, 2006; Pondeville et al., 2013[21]). The study randomly selected target corporations from databases of listed companies in the Colombo Stock Exchange, the Ceylon Chamber of Commerce, the National Chamber of Commerce Sri Lanka, the International Chamber of Commerce Sri Lanka and the Board of Investments Sri Lanka. In order to ensure accuracy of the responses and findings, the study paid special attention to identifying corporations with a high public profile and commitment towards sustainability, for example, corporations that publish sustainability reports, corporate social responsibility reports, or similar types of sustainability or corporate social responsibility disclosures in annual reports or on websites. In the Sri Lankan context, there are some existing studies on corporate social responsibility reporting (e.g. Fernando, 2007; Beddewela and Herzig, 2013; Thoradeniya et al., 2015); however, no study was found to examine the use of sustainability control systems in sustainability strategy.

The surveys were distributed in June 2014 by post and online to one member of the top management of the sample corporations, including chief executive officer, general manager, managing director, chief operating officer, chief financial officer, sustainability managers or other senior managers engaged in the formulation and implementation of proactive sustainability strategies and MCS. The study followed Dillman's (2000) survey design methods to design and distribute the survey. Of the total 202 (28.85%) received surveys, 27 were removed due to incomplete responses, leaving 175 and a final response rate of 25%. Survey responses with less than 5% missing data were replaced using the mean imputation method (Hair et al., 2014). Outliers, non-normality, non-responses bias, and common method variance were assessed using Sproactive sustainability strategies. As shown in Table 5.1, a two-sample *t*-test for non-responses bias found no statistically significant differences between online and postal respondents for all the constructs. Comparing early and late respondents reveals no significant difference with the exception of environmental strategy construct. Common method bias was assessed referring to Harman's single-factor test using all the survey items where the first factor only explains 45.2% of the total variance. If a significant common method bias is presented, (i) a single-factor will result from the factor analysis, or (ii) a single-factor explains the majority of the covariance amongst variables (Podsakoff et al., 2003). Following Hair et al. (2014), the study assessed the collinearity statistics for the inner model as the PLS-SEM framework only consists of reflective measures. Variance Inflation Factors were well below the acceptable norm of 5, with the highest value of 2.85, confirming the absence of a significant

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[21] The sample corporations were selected with minimum of 50 employees. Pondeville et al. (2013) identify corporations with more than 20 employees as large-scale corporations and ensure the implementation of environmental management control systems.

collinearity amongst constructs. As a whole the results support the absence of significant non-responses, single source bias, and collinearity issues.

TABLE 5.1 NON-RESPONSE BIAS

Construct	Early (n=109)	Late (n=66)	Online (n=82)	Postal (n=93)
Environmental strategy	3.70**	4.00**	3.79	3.83
Economic strategy	3.53	3.76	3.63	3.60
Social strategy	4.20	4.22	4.13	4.27
Belief systems	3.56	3.40	3.40	3.59
Boundary systems	3.82	3.70	3.71	3.83
Diagnostic control systems	3.33	3.10	3.19	3.29
Interactive control systems	3.39	3.19	3.29	3.34
Environmental performance	3.72	3.95	3.77	3.84
Economic performance	3.54	3.66	3.54	3.64
Social performance	3.75	3.72	3.65	3.82
Instrumental variable	3.92	4.12	4.00	3.98

** Means are significantly different at $p < 0.05$.

Table 5.2 depicts the demographic details of the sample corporations and respondents. Of the 175 participating corporations, 78.3% were local corporations and 21.7% were multinational; 45.1% were from the manufacturing sector and 54.9% from the services sector. While 67.64% of the respondents hold chief executive officer, managing director, general manager, divisional director or chief financial officer positions, 28.42% were senior managers and heads of department.

TABLE 5.2 DEMOGRAPHIC PROFILE OF ORGANISATIONS AND RESPONDENTS

Item	Categories	%	Item	Categories	%
Profile of organisations:					
Nature of company	Local	78.3	Employees	Below 100	16.6
	MNEs	21.7		100-1,000	47.4
Industry category	Manufacturing	45.1		1,000-10,000	28.6
	Services	54.9		Above 10,000	7.4
Profile of respondents:					
Position	CEO/MD/GM	38.82	*Experience*	Below 5 years	22.9
	Directors/ CFOs	28.82		5-10 years	17.7
	Senior managers	28.42		10-20 years	36.0
	Managers	7.06		Above 20 years	23.4
Educational	PhD	3.4	*Gender*	Male	85.1
background	Masters	49.7		Female	14.9
	Bachelors	18.3	*Age*	Below 30 years	10.9
	Professional	28.6		30-40 years	28.6
Place of education	Local	78.3		41-50 years	29.1
	Overseas	21.7		Above 50 years	31.4

5.3.1 Measured items and measurement scales

The study took various steps to develop and validate measures of the variables. The study adapted survey items from existing literatures with appropriate amendments for the proactive sustainability strategies and sustainability control systems context. The survey instrument was further improved by a comprehensive review and a pilot testing by 25 academics and

researchers in management accounting and sustainability. Table 5.3 provides the measurement items under each construct, factor loadings and descriptive statistics of each construct.

The study measures proactive sustainability strategies as a second-order reflective-reflective hierarchical construct in terms of environmental strategy, economic strategy, and social strategy dimensions (Bansal, 2005; Steurer et al., 2005; Baumgartner and Ebner 2010; Torugsa et al., 2013). In the 5-point scale consisting of twelve items, four items account for environmental strategy, three items account for economic strategy, and five items account for social strategy. Hart (1995, p. 998) proposes the NRBV of the firm and associated propositions based on two fundamental concepts: "(a) the linkage between the natural-resource-based view and sustained competitive advantage and (b) the interconnections amongst the three strategies". The interconnectedness nature, which characterises as path dependence and embeddedness (or overlapping), supports the operationalisation of proactive sustainability strategies as reflective-reflective constructs (e.g. Hart, 1995; Torugsa et al., 2013). This view is consistent with the 'interchangeable' nature of reflective constructs (Hair et al., 2014). Further, this is also in line with Gallardo-Vázquez and Sanchez-Hernandez's (2014) operationalisation of three dimensions of corporate social responsibility strategy as a second-order reflective-reflective construct. The study also examines three separate models to test three sustainability dimensions individually.

The study operationalise sustainability control systems as a second-order hierarchical construct that consists of four first-order levers of control: belief, boundary, diagnostic and interactive controls. The study adapted a 5-point scale of 23 items to measure sustainability control systems based on the existing literature (Henri, 2006; Widener, 2007; Arjaliès and Mundy, 2013): six items for belief systems, five items for boundary systems, six items for diagnostic control systems, and six items for interactive control systems. Following Simons' (1995) key argument that the success of using levers of control depends on the interplay amongst four levers rather than their individual use, the study hypothesises the positive dynamic tension created by the interplay of four levers of control. To support this, the study operationalises constructs as reflective-reflective. This is also consistent with the way Speklé et al. (2014) operationalised the intense use of four levers of control as a second-order reflective construct. While Speklé et al. (2014) measured interactive control systems as formative constructs with different multidimensional properties, the study measures interactive control systems using six relatively similar items and operationalised as a reflective construct. As

suggested by Speklé et al. (2014), studies that are interested in examining the balanced use of levers of control should operationalise the construct using formative measures.

The study evaluates corporate sustainability performance as a reflective-reflective second-order hierarchical construct in terms of environmental, economic and social performance. This is consistent with Gallardo-Vázquez and Sanchez-Hernandez's approach to measuring corporate social responsibility strategy as reflective-reflective measurements (2014). In the 18 5-point scale items, eight refer to environmental performance, four to economic performance, and six to social performance (Bansal, 2005). The study also examines corporate sustainability performance as separate constructs of the above three dimensions.

The study also controls for corporation size, industry type and the nature of the corporations (Ferreira et al., 2010; Henri and Journeault, 2010; Lisi, 2015). Size is measured using the number of employees. Industry type (1 = manufacturing or 0 = services) and nature of corporation (1 = local or 0 = multinational) are measured using dichotomous variables. Prior research suggests that large corporations are more likely to implement sophisticated MCS and sustainability practices compared to small corporations (González-Benito and González-Benito, 2006; Henri, 2006; Henri and Journeault, 2010; Brammer et al., 2012; Pondeville et al., 2013; Lisi, 2015). Factors such as capacity of resources commitment, economies of scale, cost savings, and public visibility might influence proactive sustainability strategies. Industry type influences the adoption of sustainability strategy and respective performance (González-Benito and González-Benito, 2006; Ferreira et al., 2010; Lisi, 2015). For instance, due to the nature of operations and environmental sensitivity, manufacturing corporations are more likely to be influenced by external stakeholders compared to service organsiations. The local versus multinational nature of the corporations has an impact on the intensity of the adoption of proactive sustainability strategies and sustainability control systems, and consequently on corporate sustainability performance. This is mainly due to the different regulatory pressures, compliances with international and local sustainability standards, and global reputation (Chan, 2005; González-Benito and González-Benito, 2006).

5.3.2 Assessment for endogeneity

Endogeneity arising from simultaneous causality seems to be a problem in this study. The study uses instrumental variable estimation to account for endogeneity (Larcker and Rusticus, 2010). The study employs a three-item construct that measures sustainability regulatory compliances

as the instrumental variable[22] (see Table 5.3). Prior literature suggests that sustainability regulatory compliances support proactive sustainability strategies and environmental management practices; however, they do not seem to have a direct influence on long term corporate sustainability performance. For instance, Walley and Whitehead (1994) argue that increased environmental regulations could even result in higher cost and might lead to loss of competitive advantage. While this study agrees with the view that regulatory compliance is essential to operate a business, however, such standard compliances are less likely to generate long term improved performance as all organisations in a particular industry are expected to comply. This is also in line with the definition of proactive sustainability strategies. A valid instrumental variable (i) must not be correlated with the equation's disturbance process, and (ii) must be highly correlated with the endogenous regressors (Larcker and Rusticus, 2010).

The study assesses the validity of the instrumental variable using (i) overidentification tests: Sargan statistics (0.018, p-value 0.894)[23], Hansen's J statistics (0.012, p-value 0.912)[24]and F-test (203, p=0.000)[25] (Sargan, 1958; Hansen, 1982; Larcker and Rusticus, 2010), (ii) underidentification tests: Anderson canon. corr. LM statistic (124.43, p=0.000) and Kleibergen-Paap rk LM statistic (42.42, p=0.000) (Anderson, 1958; Kleibergen and Paap, 2006), and (iii) weak identification test statistics of Cragg-Donald Wald F statistic (203.00) and Kleibergen-Paap rk Wald F statistic (208.49) together with Stock-Yogo's critical values (Cragg and Donald, 1993; Stock and Yogo, 2004, Kleibergen and Paap, 2006). These values are well above the Stock-Yogo's critical values at all the levels (19.93 at 10%, 11.59 at 15%, 8.75 at 20%, and 7.25 at 25%) (Stock and Yogo, 2004). These results confirm the rejection of the null hypothesis of underidentification, confirming the weak instrument validity of the instrumental variable. This validates the use of sustainability regulatory compliance as the instrumental variable (Larcker and Rusticus, 2010).

The study uses the Durbin-Wu-Hausman specification test to assess the existence of any endogeneity problem in the PLS-SEM model (Hausman, 1978). Small chi-square value (chi-square 0.270) and insignificant p-value (p=0.603) of Hausman tests confirm the non-rejection of the null hypothesis. The study also assessed the Hausman specification test for individual

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[22] Kenny (2015) suggests that in the SEM analysis if the effect of variable X on variable Y is mediated by variable M, the variable X can be used as the instrumental variable to estimate the effect of M on Y. However, in this study, as the proactive sustainability strategies has a direct link with CSP, the study introduces a separate instrumental variable to the SEM model.

[23] First-stage regression

[24] 2-Step GMM estimation

[25] First-stage regressions

models and found consistent results: environmental sustainability (chi-square 0.000, p=0.993); economic sustainability (chi-square 0.197, p=0.657), and social sustainability (chi-square 3.34, p=0.068). The above specification tests support the absence of significant endogeneity problems in the PLS-SEM model.

5.4 ANALYSES AND RESULTS

The study uses SmartPLS 3.0 to test the hypothesis using PLS-SEM analysis. PLS-SEM estimates path models with latent constructs to measure indirectly using multiple indicators. Compared to regression analysis, PLS-SEM is preferable in this study for examining mediating effects of sustainability control systems with the second-order hierarchical construct by taking into account the measurement errors that decrease the estimated relationships (Hair et al., 2014).

5.4.1 Analysis

The PLS consists of two models: (i) a measurement model (outer model) that examines the relationship between latent variables and associated manifest variables; (ii) a structural model (inner model) that examines the relationships between latent variables (Chin, 1998). The study examined all the constructs using a repeated indicator approach (Hair et al., 2014). Due to the partial nature of the estimation procedure, PLS best facilitates analysis with a small sample compared to covariance-based modeling, which requires a larger number of observations relative to the number of constructs (Chin, 1998). According to Van der Stede et al. (2005), the mean and median sample size for survey-based empirical management accounting research is 239 and 125, respectively. Given the sample size of 175 in the study, PLS-SEM is suitable compared to other covariance-based analysis.

5.4.2. Measurement of psychometric properties

The study conducted various analyses to verify the adequacy of the measurement model in terms of reliability, convergent validity and discriminant validity (Chin, 1998). For the estimation of reliability of individual items, standardised factor loadings were calculated. Internal consistency of the constructs was assessed by referring to composite reliability. As shown in Table 5.3, factor loadings for most of the measurements are greater than 0.7, and all the measurements are significant at p<0.01 (Hulland, 1999). Cronbach's Alpha, Composite Reliability (CR), and Average Variance Extracted (AVE) mostly exceed the acceptable thresholds of 0.7, 0.7, and 0.5, respectively (Fornell and Larcker, 1981). These findings ensure the acceptance of convergent validity of all the indicators (Chin, 1998, 2010).

TABLE 5.3 PSYCHOMETRIC PROPERTIES FOR FIRST-ORDER AND SECOND-ORDER CONSTRUCTS

Constructs and respective indicators	Loadings

Proactive sustainability strategy
Alpha: .934 CR: .943 AVE: .580

Environmental strategy
Alpha: .895 CR: .927 AVE: .760 R^2: .757 β: .870 p<.01 Mean: 3.81 SD: .888
Please indicate the extent to which your company integrates the following elements into strategies.

Promoting sustainable resources management (e.g. renewable energy)	.849
Reducing emissions into the air, water and ground	.882
Promoting and preserving biodiversity	.869
Minimising the environmental consequences of products and services	.887

Economic strategy
Alpha: .910 CR: .943 AVE: .847 R^2: .768 β: .876 p<.01   Mean: 3.58 SD: .860
Please indicate the extent to which your company integrates the following elements into strategies.

Promoting sustainability innovations	.902
Engaging in sustainability learning and knowledge management	.916
Developing sustainability business processes	.943

Social strategy
Alpha: .915 CR: .936 AVE: .746 R^2: .727 β: .853 p<.01 Mean: 4.20 SD: .692
Please indicate the extent to which your company integrates the following elements into strategies.

Ensuring health and safety of employees	.864
Investing in human capital development	.859
Promoting ethical behaviour and protecting human rights	.892
Avoiding controversial, corruption or cartel activities	.886
Promoting corporate citizenship	.836

Sustainability control systems
Alpha: .963 CR: .966 AVE: .559

Belief systems
Alpha: .885 CR: .913 AVE: .636 R^2: .771 β: .878 p<.01 Mean: 3.50 SD: .910
Please indicate the extent to which your company uses the following mechanisms to communicate sustainability core values.

Vision and mission statements	.794
Strategic plans and policies	.837
Sustainability reports, corporate social responsibility reports, annual reports etc.	.754
Companywide conferences, forums, workshops and training sessions etc.	.840
Intranet, websites, posters, booklets etc.	.794
Top management communications (e.g. minutes of Board meetings)	.761

Boundary systems
Alpha: .900 CR: .927 AVE: .718 R^2: .805 β: .897 p<.01 Mean: 3.77 SD: .845
Please indicate the extent to which your company adheres to the following.

Regular assessments of sustainability code of conduct	.863
Ethical and professional guidelines	.769
Guidelines on sustainability related best practices	.924
Global Reporting Indicators (GRI)	.763
Internal sustainability policies, structures and activities	.905

Diagnostic control systems
Alpha: .878 CR: .908 AVE: .624 R^2: .831 β: .912 p<.01 Mean: 3.24 SD: .984
Please indicate the extent to which your company uses the following mechanisms to evaluate sustainability performance.

Standardised reporting processes (e.g. GRI and UN Global compact)	.776

Environmental Management Systems (EMS)	.851
Benchmarking sustainability practices with competitors	.779
Top management's reviews of performance achievements	.801
Environmental and social audits (both Internal and external)	.826
Use of management tools (e.g. Kaizen, Hoshin Kanri, 5s, Just in Time)	.695

Interactive control systems
Alpha: .934 CR: .948 AVE: .755 R^2: .865 β: .930 p<.01 Mean: 3.34 SD: .935
Please indicate the extent to which your company uses the following mechanisms for managing sustainability related uncertainties.

Top management regularly pays attention to sustainability control practices	.902
Top management regularly interprets information on sustainability practices	.902
Operating managers are frequently involved in sustainability practices	.891
Regular meetings with top sustainability managers and operational managers	.893
Exchange with stakeholders of best practices to share sustainability innovations	.884
Use of intranet systems for communities of practitioners	.729

Corporate sustainability performance
Alpha: .942 CR: .949 AVE: .525

Environmental performance
Alpha: .921 CR: .936 AVE: .646 R^2: .892 β: .945 p<.01 Mean: 3.79 SD: .789
Please indicate the extent to which the following statements apply to your company.

Chose inputs from sources that are remediated or replenished	.783
Reduced environmental impacts of production processes or eliminated environmentally damaging processes	.866
Reduced operations in environmentally sensitive locations	.814
Reduced likelihood of environmental accidents through process improvements	.881
Reduced waste by streamlining processes	.849
Used waste as inputs for own processes	.691
Disposed waste responsibly	.783
Handled or stored toxic waste responsibly	.745

Economic performance
Alpha: .670 CR: .820 AVE: .604 R^2: .584 β: .764 p<.01 Mean: 3.53 SD: .709
Please indicate the extent to which the following statements apply to your company.

Worked with government officials to protect the company's interests	.792
Reduced costs of inputs for same level of outputs	.826
Sold waste product for revenue	Deleted
Created spin-off technologies that could be profitably applied to other areas of the business	.708

Social performance
Alpha: .903 CR: .925 AVE: .674 R^2: .810 β: .900 p<.01 Mean: 3.74 SD: .772
Please indicate the extent to which the following statements apply to your company.

Considered interests of stakeholders in investments by creating a formal dialogue	.800
Communicated the firm's environmental impacts and risks to the public	.764
Improved employee or community health and safety	.797
Protected claims and rights of local community	.871
Showed concern for the visual aspects of the firm's facilities and operations	.851
Recognised and acted on the need to fund local community initiatives	.839

Instrumental variable
Alpha: .650 CR: .811 AVE: .588 Mean: 3.99 SD: .786

Risks of non-compliance with legal requirements	.738
Sustainability related legal and regulatory compliances (e.g. Environment Protection Licences - EPL)	.802
Emergence of new sustainability regulations	.760

To assess discriminant validity the study uses the criteria of Fornell and Larcker, cross-loadings, chi-square differences, and confidence interval analyses. Table 5.4 shows that construct

intercorrelations in the model do not exceed the square root of the AVE, with the exception of the correlation between diagnostic systems and interactive systems (Fornell and Larcker, 1981; Chin, 1998, 2010). According to Hair et al. (2014), this exception is acceptable as these two items are lower order constructs of the second-order sustainability control systems construct.

TABLE 5.4 INTERCORRELATIONS OF THE LATENT VARIABLES FOR THE FIRST-ORDER CONSTRUCTS AND SQUARE ROOT OF AVE

Constructs	1	2	3	4	5	6	7	8	9	10	11
1. Environment strategy	.872										
2. Economic strategy	.712	.920									
3. Social strategy	.560	.612	.863								
4. Belief systems	.632	.708	.456	.797							
5. Boundary systems	.587	.661	.481	.761	.847						
6. Diagnostic systems	.695	.738	.451	.712	.746	.790					
7. Interactive systems	.663	.752	.467	.728	.766	.834[a]	.869				
8. Environment performance	.687	.607	.488	.525	.509	.579	.585	.804			
9. Economic performance	.529	.514	.364	.425	.392	.484	.444	.672	.777		
10. Social performance	.692	.670	.686	.581	.616	.643	.678	.732	.588	.821	
11. Instrumental variable	.504	.536	.485	.588	.692	.662	.656	.480	.355	.551	.767

[a]first-order construct of sustainability control systems.

Table 5.5 provides the cross-loadings amongst the constructs, revealing that all the items are loaded to respective constructs. This confirms the discriminant validity. The study also conducted a chi-square difference test and confidence interval analysis to further validate the discriminant validity (Anderson and Gerbing, 1988).

As shown in Table 5.6, chi-square differences range from 28.479 to 199.53, each with one degree of freedom and are statistically significant at $p<0.01$. The lower significant chi-square values in the unconstrained model verify the discriminant validity amongst all the compared dimensions. As presented in Table 5.6, the absence of value 1.0 in the confidence intervals confirms the discriminant validity amongst all the compared dimensions. As a whole, these indicators support the acceptability of the psychometric properties of the measurement model in terms of reliability, convergent validity, and discriminant validity.

TABLE 5.5 CROSS-LOADINGS FOR ASSESSMENT OF DISCRIMINANT VALIDITY

	1	2	3	4	5	6	7	8	9	10	11
Item 1	**.849**	.652	.436	.532	.492	.648	.622	.576	.482	.585	.429
Item 2	**.882**	.582	.483	.560	.528	.592	.549	.583	.501	.579	.551
Item 3	**.869**	.622	.466	.578	.545	.623	.602	.591	.410	.585	.406
Item 4	**.887**	.628	.561	.536	.483	.565	.543	.641	.454	.662	.376
Item 1	.640	**.902**	.566	.621	.613	.662	.656	.631	.487	.630	.506
Item 2	.619	**.916**	.521	.636	.568	.675	.692	.469	.463	.579	.458
Item 3	.703	**.943**	.600	.697	.642	.700	.727	.572	.468	.639	.516
Item 1	.511	.529	**.864**	.362	.393	.394	.410	.442	.286	.584	.446
Item 2	.443	.570	**.859**	.481	.472	.443	.469	.375	.270	.578	.425
Item 3	.483	.506	**.892**	.374	.420	.385	.382	.478	.395	.580	.460
Item 4	.499	.503	**.866**	.387	.367	.328	.335	.439	.322	.580	.373
Item 5	.479	.534	**.836**	.366	.423	.398	.420	.371	.296	.638	.390
Item 1	.547	.580	.434	**.794**	.636	.585	.613	.474	.335	.503	.491
Item 2	.548	.627	.400	**.837**	.676	.623	.671	.489	.392	.487	.522
Item 3	.430	.502	.361	**.754**	.591	.489	.508	.313	.311	.414	.368
Item 4	.499	.559	.320	**.840**	.620	.587	.578	.426	.311	.443	.493
Item 5	.575	.594	.290	**.794**	.577	.570	.558	.463	.421	.510	.427
Item 6	.412	.515	.374	**.761**	.529	.544	.537	.325	.255	.415	.505
Item 1	.435	.551	.356	.669	**.863**	.639	.677	.425	.291	.478	.577
Item 2	.377	.440	.409	.482	**.769**	.494	.513	.332	.251	.429	.649
Item 3	.571	.629	.442	.699	**.924**	.697	.715	.464	.372	.544	.653
Item 4	.531	.515	.347	.619	**.763**	.625	.588	.389	.328	.524	.469
Item 5	.552	.641	.479	.725	**.905**	.685	.723	.525	.400	.618	.594
Item 1	.529	.569	.339	.599	.631	**.776**	.603	.354	.307	.497	.432
Item 2	.657	.596	.349	.571	.617	**.851**	.675	.565	.445	.533	.541
Item 3	.534	.612	.356	.535	.582	**.779**	.657	.441	.457	.511	.580
Item 4	.567	.634	.386	.606	.637	**.801**	.728	.526	.453	.536	.541
Item 5	.571	.604	.372	.573	.579	**.826**	.691	.464	.371	.523	.532
Item 6	.418	.466	.333	.482	.477	**.695**	.591	.377	.241	.436	.513
Item 1	.607	.698	.505	.647	.727	.738	**.902**	.531	.402	.629	.616
Item 2	.612	.686	.466	.681	.690	.743	**.902**	.534	.424	.624	.605
Item 3	.605	.671	.424	.631	.668	.741	**.891**	.527	.367	.594	.578
Item 4	.604	.676	.387	.659	.682	.766	**.893**	.493	.341	.570	.553
Item 5	.584	.665	.377	.635	.659	.746	**.884**	.559	.457	.617	.602
Item 6	.427	.506	.250	.531	.554	.604	**.729**	.391	.316	.492	.451
Item 1	.493	.494	.327	.421	.372	.475	.463	**.783**	.587	.583	.316
Item 2	.633	.621	.485	.580	.556	.581	.620	**.866**	.582	.742	.493
Item 3	.549	.463	.325	.426	.436	.434	.519	**.814**	.533	.646	.349
Item 4	.583	.537	.381	.484	.474	.549	.563	**.881**	.591	.619	.440
Item 5	.668	.555	.418	.411	.416	.526	.478	**.849**	.554	.596	.387
Item 6	.443	.384	.225	.292	.263	.397	.388	**.691**	.490	.428	.312
Item 7	.564	.467	.530	.411	.402	.409	.388	**.783**	.499	.541	.434
Item 8	.453	.338	.428	.299	.305	.313	.292	**.745**	.476	.510	.336
Item 1	.379	.382	.353	.338	.325	.352	.281	.464	**.792**	.462	.279
Item 2	.444	.423	.370	.320	.329	.340	.335	.555	**.826**	.433	.306
Item 3	.407	.389	.124	.332	.258	.435	.414	.542	**.708**	.474	.241
Item 1	.551	.600	.524	.503	.502	.507	.542	.613	.546	**.800**	.404
Item 2	.560	.541	.442	.511	.519	.572	.599	.520	.431	**.764**	.404
Item 3	.553	.566	.605	.498	.515	.511	.598	.648	.450	**.797**	.530
Item 4	.545	.464	.588	.406	.459	.505	.522	.629	.491	**.871**	.458
Item 5	.592	.569	.632	.461	.508	.522	.525	.654	.512	**.851**	.479
Item 6	.615	.563	.571	.492	.538	.559	.566	.532	.460	**.839**	.434
Item 1	.266	.397	.459	.397	.505	.425	.392	.286	.242	.434	**.738**
Item 2	.428	.337	.340	.407	.508	.473	.496	.378	.257	.372	**.802**
Item 3	.457	.489	.321	.539	.571	.612	.607	.433	.313	.455	**.760**

Note: 1=Environmental strategy, 2=Economic strategy, 3=Social strategy, 4=Belief systems, 5=Boundary systems, 6=Diagnostic control systems, 7=Interactive control systems, 8=Environmental performance, 9=Economic performance, 10=Social performance, 11=Instrumental variable

TABLE 5.6 CHI-SQUARE DIFFERENCE AND CONFIDENCE INTERVAL ASSESSMENT FOR DISCRIMINANT VALIDITY

Dimensions Compared		χ2 Constrained	χ2 Unconstrained	χ2 difference	φ Estimates	Confidence Interval
ENVSTG	ECOSTG	145.465(14)[a]	21.714(13)[a]	123.751(1)[a]	.783(.0374)[b]	[.782, .783]
	SOCSTG	113.841(27)	47.666(26)	66.175(1)	.621(.0545)	[.621, .621]
	BELIEF	185.457(35)	96.537(34)	88.920(1)	.710(.0472)	[.710, .710]
	BOUND	121.694(27)	48.325(26)	73.369(1)	.643(.0519)	[.643, .644]
	DIAGN	183.916(35)	66.507(34)	117.409(1)	.787(.0387)	[.787, .788]
	INTER	210.721(35)	110.272(34)	100.450(1)	.721(.0433)	[.721, .721]
	ENVPMS	289.251(54)	175.796(53)	113.455(1)	.758(.0398)	[.758, .759]
	ECNPMS	74.009(14)	23.013(13)	50.996(1)	.626(.0660)	[.625, .626]
	SOCPMS	192.723(35)	82.160(34)	110.563(1)	.760(.0406)	[.760, .761]
ECOSTG	SOCSTG	128.344(20)	48.431(19)	79.913(1)	.659(.0496)	[.658, .659]
	BELIEF	197.764(27)	74.266(26)	123.498(1)	.785(.0375)	[.785, .786]
	BOUND	136.047(20)	34.942(19)	101.104(1)	.716(.0432)	[.716, .717]
	DIAGN	186.889(27)	53.459(26)	133.450(1)	.811(.0348)	[.810, .811]
	INTER	230.569(27)	81.798(26)	148.771(1)	.809(.0318)	[.809, .810]
	ENVPMS	270.161(44)	190.035(43)	80.125(1)	.658(.0491)	[.657, .658]
	ECNPMS	58.451(9)	12.466(8)	45.984(1)	.588(.0675)	[.587, .588]
	SOCPMS	174.758(27)	80.905(26)	93.853(1)	.709(.0450)	[.708, .709]
SOCSTG	BELIEF	164.207(44)	125.423(43)	38.783(1)	.497(.0652)	[.497, .498]
	BOUND	139.139(35)	94.493(34)	44.646(1)	.516(.0619)	[.516, .516]
	DIAGN	152.850(44)	115.404(43)	37.445(1)	.488(.0660)	[.488, .489]
	INTER	174.652(44)	129.592(43)	45.059(1)	.514(.0613)	[.514, .515]
	ENVPMS	276.127(65)	228.220(64)	47.907(1)	.532(.0605)	[.532, .532]
	ECNPMS	88.088(20)	55.346(19)	32.742(1)	.499(.0735)	[.499, .500]
	SOCPMS	237.974(44)	129.918(43)	108.057(1)	.746(.0411)	[.745, .746]
BELIEF	BOUND	290.809(44)	140.660(43)	150.149(1)	.841(.0307)	[.840, .841]
	DIAGN	273.601(54)	152.81(53)	120.78(1)	.798(.0379)	[.798, .799]
	INTER	303.488(55)	172.550(54)	130.938(1)	.796(.0351)	[.795, .796]
	ENVPMS	324.767(77)	264.014(76)	60.754(1)	.598(.0562)	[.598, .599]
	ECNPMS	108.813(27)	78.905(26)	29.908(1)	.498(.0762)	[.497, .498]
	SOCPMS	236.734(54)	171.704(53)	65.03(1)	.624(.0550)	[.623, .624]
BOUND	DIAGN	315.789(44)	178.523(43)	137.257(1)	.816(.0337)	[.816, .817]
	INTER	282.875(44)	128.60(43)	154.415(1)	.820(.0303)	[.819, .820]
	ENVPMS	264.993(65)	208.856(64)	56.137(1)	.567(.0572)	[.566, .567]
	ECNPMS	60.562(20)	32.082(19)	28.479(1)	.470(.0755)	[.470, .470]
	SOCPMS	208.934(44)	133.227(43)	75.707(1)	.650(.0506)	[.650, .650]
DIAGN	INTER	356.338(54)	156.809(53)	199.529(1)	.906(.0217)	[.906, .907]
	ENVPMS	305.363(77)	227.287(76)	78.076(1)	.662(.0503)	[.662, .662]
	ECNPMS	112.729(27)	74.980(26)	37.749(1)	.564(.0721)	[.563, .564]
	SOCPMS	224.202(54)	137.358(53)	86.844(1)	.699(.0477)	[.698, .699]
INTER	ENVPMS	343.440(77)	264.977(76)	78.464(1)	.643(.0494)	[.643, .643]
	ECNPMS	150.809(27)	119.984(26)	30.825(1)	.487(.0739)	[.487, .487]
	SOCPMS	262.107(54)	163.319(53)	98.788(1)	.712(.0434)	[.712, .712]
ENVPMS	ECNPMS	258.172(44)	168.403(43)	89.769(1)	.807(.0495)	[.806, .807]
	SOCPMS	390.726(77)	258.339(76)	132.386(1)	.797(.0345)	[.797, .798]
ECNPMS	SOCPMS	160.099(27)	98.993(26)	61.105(1)	.686(.0607)	[.685, .686]

a: degree of freedom in parentheses. b: standard error in parentheses. ENVSTG=Environmental strategy, ECOSTG=Economic strategy, SOCSTG=Social strategy, BELIEF=Belief systems, BOUND=Boundary systems, DIAGN=Diagnostic control systems, INTER=Interactive control systems, ENVPMS=Environmental performance, ECNPMS=Economic performance, SOCPMS=Social performance

5.4.3 Assessment of structural model

The study analyses the structural model in two steps: (i) assessing the path coefficients (Table 5.7); and (ii) assessing the indirect effects through intervening variables (Table 5.8). SmartPLS facilitates the bootstrapping procedure to estimate the significance of relationships referring to *t*-statistics together with estimates means, and standard errors. The study selected a path weighting computational option to estimate the inner model as it is the standard weighting scheme that generates the highest variance accounted for by the dependent variables (R^2) for endogenous latent variables (Hair et al., 2014). The study employed 5,000 bootstrapping resamples.

Table 5.3 shows the analysis of the first-order and second-order reflective constructs of proactive sustainability strategies, sustainability control systems, and corporate sustainability performance. proactive sustainability strategies construct exceeds all acceptable criteria *(*Alpha= .934, CR= .943, and AVE=.580), satisfactorily representing by path coefficients of first-order constructs of environmental strategy *(β=.870)*, economic prosperity *(β=.876)*, and social strategy *(β=.853)*. R^2 values of the all first-order constructs are very strong, with a lowest of 72.7%. This evidence supports the use of proactive sustainability strategies as a second-order construct to represent all three elements of sustainability strategy. All the path coefficient estimates for the first-order four sustainability control systems constructs (belief *β=.878*, boundary *β=.897*, diagnostic *β=.912*, and interactive *β=.930)* are positively significant at *p<0.01*. R^2 values of all the first-order levers of control constructs are above 77%. Values of Alpha, CR, and AVE for the four constructs are above 0.7, 0.7, and 0.5, respectively, which surpasses the threshold of all acceptable criteria. The use of sustainability control systems as a second-order hierarchical construct confirms that the four levers of control significantly support the sustainability control systems construct to capture the overall mediating effect. Corporate sustainability performance (Alpha=.942 CR=.949 AVE=.525) construct consists of three first-order constructs of environmental performance *(β=.945, R^2=.892)*, economic performance *(β=.764, R^2=.584)*, and social performance *(β=.900 R^2=.810)*, where all three constructs reflect strong evidence to support the construct. While all the first-order constructs reflect three second-order constructs comparatively, an increase (decrease) in the use of second-order constructs is reflected with reference to the increase (decrease) of the first-order constructs (Speklé et al., 2014). For example, in the proactive sustainability strategies construct, economic strategy reveals the highest impact while social strategy shows the least impact. However, in the corporate sustainability performance construct, environmental performance has the highest impact and economic performance the least impact. Sustainability control systems construct

indicates that interactive controls have the highest and belief systems have the lowest effect. Table 5.7 shows the PLS-SEM bootstrapped parameter estimates and evaluations of the structural paths for the four measurement models: (i) corporate sustainability (integrated model); (ii) environmental sustainability strategy; (iii) economic sustainability strategy; and (iv) social sustainability strategy.

TABLE 5.7 STRUCTURAL MODEL ASSESSMENT

Endogenous constructs	R^2		Q^2	
Corporate sustainability model				
Sustainability control systems	.586		.323	
Corporate sustainability performance	.637		.328	
Environmental sustainability model				
Sustainability control systems	.512		.282	
Environmental performance	.524		.327	
Economic sustainability model				
Sustainability control systems	.884		.490	
Economic performance	.280		.151	
Social sustainability model				
Sustainability control systems	.264		.146	
Social performance	.638		.424	
Relations coefficients	Path	t-values	f^2	q^2
Corporate sustainability model				
Proactive sustainability strategy → Corporate sustainability performance	.605***	7.268	.402	.112
Proactive sustainability strategy → Sustainability control systems	.765***	24.728		
Sustainability control systems → Corporate sustainability performance	.216**	2.336	.052	.015
Control variables				
Firm size → Corporate sustainability performance	.036	1.174		
Industry type → Corporate sustainability performance	-.090**	2.046		
Nature of the firm → Corporate sustainability performance	-.004	0.087		
Environmental sustainability model				
Environmental strategy → Environmental performance	.507***	5.641	.248	.114
Environmental strategy → Sustainability control systems	.715***	18.185		
Sustainability control systems → Environmental performance	.230**	2.449	.050	.021
Control variables				
Firm size → Environmental performance	-.012	0.26		
Industry type → Environmental performance	-.136***	2.668		
Nature of the firm → Environmental performance	.031	0.617		
Economic sustainability model				
Economic strategy → Economic performance	.347***	3.471	.057	.027
Economic strategy → Sustainability control systems	.215***	3.492		
Sustainability control systems → Economic performance	.213*	1.854	.022	.009
Control variables				
Firm size → Economic performance	-.010	0.299		
Industry type → Economic performance	.005	0.078		
Nature of the firm → Economic performance	-.017	0.247		
Social sustainability model				
Social strategy → Social performance	.453***	7.244	.390	.167
Social strategy → Sustainability control systems	.514***	9.199		
Sustainability control systems → Social performance	.463***	7.502	.401	.174
Control variables				
Firm size → Social performance	.053	1.427		
Industry type → Social performance	-.024	0.538		
Nature of the firm → Social performance	-.022	0.456		

Notes: *p<.10, **p<.05, ***p<.01 (two-tailed). Effect size: f^2 and q^2 .02=Small, .15=Medium .35=Large).

Figure 5.2 graphically presents the results of PLE-SEM full model. The results show that all the main path coefficients are positively significant under the all four models at *p*<0.01 and *p*<0.05, except one path: the relationship between sustainability control systems and economic performance, which is significant at *p*<0.10. However, out of all control variables, only industry type has a significant impact on environmental performance.

FIGURE 5.2 PLS-SEM CORPORATE SUSTAINABILITY MODEL
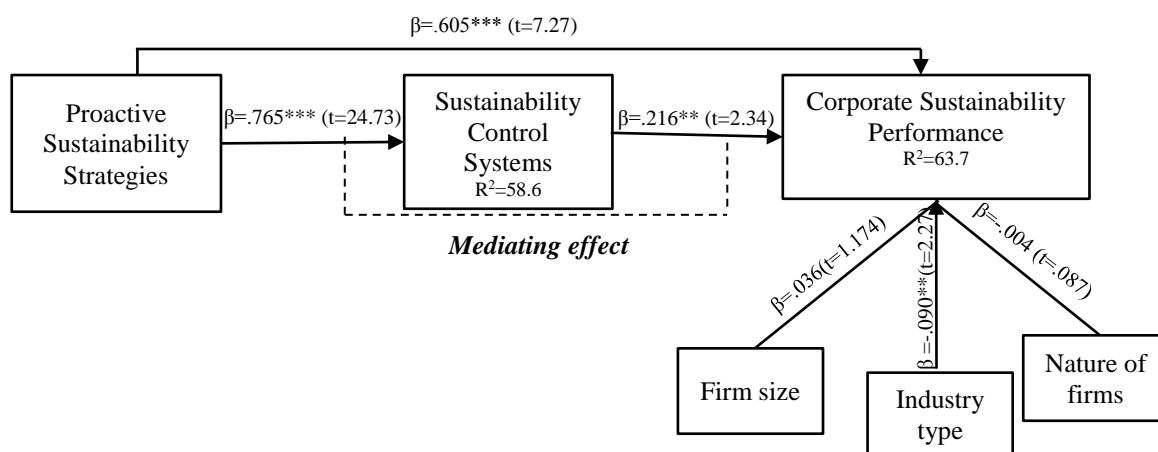
Note: Values in the paths represent the standardised bootstrap estimates, *p<.10, **p<.05, ***p<.01.

Table 5.8 presents the results of the mediating effect of sustainability control systems on the relationship between proactive sustainability strategies and corporate sustainability performance. The study conducted the mediating analysis by ensuring the conditions proposed by Baron and Kenny (1986). As shown in Table 5.8, sustainability control systems is established as a partial mediator, except in the economic sustainability model, which shows no mediation impact. The study used Sobel z-statistics (Sobel, 1982) to test the significance of the mediating effect. As depicted in Table 5.8, Sobel's z-statistics indicate that except for the economic sustainability model, the mediating effects of all three models are significant at *p*<0.05. The study also analysed the Variance Accounted For (VAF) to reveal the magnitude of the indirect impact of sustainability control systems (Hair et al., 2014). VAF confirms that sustainability control systems partially mediate the relationship between proactive sustainability strategies and corporate sustainability performance, except in the economic sustainability model. While the highest partial mediating effect is in the social sustainability model (34.4%), the lowest effect is found in the corporate sustainability model (21.3%).

TABLE 5.8 MEDIATING EFFECT OF SUSTAINABILITY CONTROL SYSTEMS

Models	Direct effect	Indirect effect	Total effect	Sobel test	VAF
Proactive sustainability strategy → Corporate sustainability performance	.605***	.165**	.770***	2.288**	21.3%
Environmental strategy → Environmental performance	.507***	.164**	.671***	2.375**	24.5%
Economic strategy → Economic performance	.347***	.046	.393***	1.617	11.7%
Social strategy → Social performance	.453***	.238***	.691***	5.849***	34.4%

Notes: **$p<.05$, ***$p<.01$(two-tailed). Variance accounted for (VAF): VAF>80% Full mediation, 20%≤VAF≤80% Partial mediation, VAF<20% No mediation.

The study examined a number of measures to assess the relevance of significant relationships and predictive capabilities of measurements, which determine the goodness-of-fit in PLS (Chin, 1998; Hair et al., 2014). The R^2, which measures the predictive accuracy, is the central criterion for judging the quality of the PLS-SEM (Chin, 1998; Hair et al., 2014). As shown in Table 5.7, R^2 values range from 26.4% to 88.4%. The cross-validated redundancy measure (Q^2) assesses the predictive relevance of the PLS-SEM model (Geisser, 1974; Stone, 1974). Q^2 values larger than zero for a particular endogenous construct indicate the path model's predictive relevance for a construct. Q^2 values generated through the blindfolding procedure range from 0.146 to 0.490, which are well above zero, confirming the predictive relevance of all the four path models. The effect size (f^2) is a measure of the impact of a particular exogenous construct on an endogenous construct with accounting for R^2 changes (Cohen, 1988; Hair et al., 2014). Proactive sustainability strategies has the highest effect on corporate sustainability performance (.402). While social strategy (0.390) and sustainability control systems (0.401) reveal a strong effect on social performance, environmental strategy has a medium effect on environmental performance (0.248). All other exogenous constructs reveal small effects on their respective endogenous constructs. The q^2 assesses the relative impact of exogenous variables on an endogenous variable by taking into account the changes in Q^2 (Chin, 1998). While the q^2 effect size for the predictive relevance of social strategy (0.167) and sustainability control systems (0.174) reveal a medium effect on social performance, the relative impact of all other exogenous variables on endogenous variables is small.

5.5 DISCUSSION AND CONCLUSION

This study investigated the mediating role of sustainability control systems on the relationship between proactive sustainability strategies and corporate sustainability performance. Data came from survey responses of 175 top managers in multinational and local corporations representing both manufacturing and service corporations operating in Sri Lanka, a developing economy.

The study finds that sustainability control systems only partially mediate the relationship between proactive sustainability strategies and corporate sustainability performance. The study examines the mediation effect of sustainability control systems under three sustainability models, where the environmental and social sustainability strategies reveal a partial mediation, and economic sustainability strategy shows no mediation. Henri and Journeault (2010) support this view that sustainability control systems do not have the same impact on different corporate sustainability performance. Other findings include that (i) proactive sustainability strategies is positively associated with sustainability control systems and corporate sustainability performance, and (ii) sustainability control systems are positively associated with corporate sustainability performance. These findings are consistent in all four models.

The partial and no mediation impacts highlight the necessity of enhancing the current use of sustainability control systems to implement proactive sustainability strategies. The current use of sustainability control systems could be attributed to the emerging nature of the role of sustainability control systems to facilitate the implementation of proactive sustainability strategies (Crutzen and Herzig, 2013). Supporting this finding, Passetti et al. (2014, p. 295) recently concluded that at present "sustainability accounting is in a relatively early phase of development and the lack of engagement by most firms is negative for the construction of a more balanced relationship between business and environmental and social issues". Findings in this study are also consistent with Lisi's (2015) suggestion that the use of environmental performance measures partially mediate the relationships amongst environmental motivation and environmental performance. As suggested by Lisi (2015), this could also be accounted for in other MCS variables, such as informal controls not considered in this study.

Supporting Simons' (1995, 2000) proposition that the combination of four levers of control creates a positive dynamic tension on performance, the study concludes that corporations' ability to use levers of control together has the potential to support the implementation of proactive sustainability strategies. The positively significant relationship between sustainability control systems and corporate sustainability performance is consistent with Lisi's (2015) finding that environmental performance measures positively influence economic performance; however, inconsistent with Henri and Journeault's (2010) conclusion that eco-control has no direct effect on economic performance. Nevertheless, Henri and Journeault (2010) reveal an indirect impact through contextual indicators. As revealed by Henri and Journeault (2010), the interpretation of the use of sustainability control systems should take into account the contextual conditions within which the corporations operate. Conclusions

without such considerations would lead to misinterpretation of theoretical relevance, ignore prevailing economic conditions, and even mislead managerial decision making.

This study contributes to enhance our understanding of the use of sustainability control systems in translating proactive sustainability strategies into corporate sustainability performance by providing a comprehensive analysis of environmental, social and economic sustainability dimensions. Given the partial mediating impact of sustainability control systems on the relationship between proactive sustainability strategies and corporate sustainability performance, it is suggested that corporations should take a more proactive approach to implement proactive sustainability strategies using sustainability control systems. In light of this, the current study outlines the importance of examining the use of sustainability control systems from a comprehensive perspective that provides guidance for corporations to assess their sustainability management approach. Accordingly, it supports corporations to identify the appropriate sustainability control systems as a means of achieving corporate sustainability performance through effective implementation of proactive sustainability strategies. More specifically, the study highlights the importance of belief, boundary, diagnostic, and interactive control systems in implementing proactive sustainability strategies. Given the importance of sustainability control systems to implementing proactive sustainability strategies, managers should be aware that merely integrating sustainability issues into strategy might not help corporations to achieve corporate sustainability performance goals. In addition, special attention should be given to integrating sustainability into emerging sustainability control systems to facilitate the implementation of strategy. It should be noted that the alignment of proactive sustainability strategies and operations of other internal functional departments is crucial for effective strategy implementation. The internal alignment, in turn, would facilitate top management to systematically address external sustainability concerns.

While the study focuses on both large-scale local and multinational, manufacturing and service corporations, at present, most of the corporations are in transition, moving from financial oriented traditional MCS to sustainability control systems. Compared to Western industrialised economies, corporations operating in Sri Lanka seem to have relatively less sustainability issues (e.g. greenhouse gas emissions) due to the nature of the economy. For instance, according to the Ceylon Electricity Board, by December 2013, 48% of the country's electricity demand was powered by hydro-electricity. Thus, the intensity of the use of sustainability control systems to support proactive sustainability strategies may be relatively low compared to industrialised economies. However, even examining the corporate

engagement in sustainability decision making in the United Kingdom, Spence and Rinaldi (2014) recently concluded that "we are still a long way from a new business model which prioritises sustainability". Therefore, it is suggested that the top management needs a more proactive approach to implementing proactive sustainability strategies by integrating sustainability aspects into traditional MCS. Nevertheless, these findings reveal an encouraging message for integrating sustainability issues into organisational strategy.

Although this study does not propose a formal hypothesis on the relationship between proactive sustainability strategies and corporate sustainability performance, the results reveal that proactive sustainability strategies is positively and significantly associated with corporate sustainability performance in terms of environmental, economic and social perspectives. This is in line with previous studies that conclude a positive impact of proactive sustainability strategies on corporate sustainability performance (Judge and Douglas, 1998; Sharma and Vredenburg, 1998; Klassen and Whybark, 1999; Christmann, 2000; Banerjee, 2001), and contributes to resolving the previous inconclusive outcomes on the link between proactive sustainability strategies and corporate sustainability performance. Moreover, results are also in line with prior studies that support the applicability of NRBV of the firm in the developing economy context (Chan, 2005).

The findings should be interpreted within the limitations associated with internal and external validity. First, this study is an attempt to provide a comprehensive analysis of the relationship between proactive sustainability strategies and corporate sustainability performance in response to the extensive number of fragmented studies. The term 'sustainability' is a vague concept, where no consensus has yet been established on what are the specific properties and boundaries in measuring proactive sustainability strategies, sustainability control systems, and corporate sustainability performance constructs. While the PLS-SEM analyses meet most of the acceptable criteria to measure all three sustainability strategy and performance constructs, measurement instruments used in this study may not fully capture the 'comprehensive view' of environmental, economic and social sustainability dimensions. Future studies may extend other perspectives by integrating additional attributes and properties into these constructs.

Second, while this study investigates the interplay amongst the four levers of control together, it only examines the use of formal MCS. Examining part of controls might lead to model under-specification (Chenhall, 2003). Thus, future research may integrate evidence from

both formal and informal controls and other MCS frameworks, such as the levers of control framework proposed by Tessier and Otley (2012). Third, from the NRBV of the firm, while this study examines proactive sustainability strategies, there is an emerging need to examine the impact of sustainability dynamic capabilities on sustainability performance (Aragón-Correa and Sharma, 2003; Hart and Dowell, 2010). Furthermore, it is viable to focus on the role of sustainability control systems in supporting sustainability dynamic capabilities by referring to NRBV of the firm. Future studies can also examine the link between proactive sustainability strategies and overall corporate performance instead of corporate sustainability performance to investigate whether there is a significant difference.

The study collected cross-sectional data only from a single respondent from each corporation. Inherently studies of this nature cannot prove causality and cannot rule out reverse causality. While the study conducted a Hausman test for endogeneity, it does not completely rule out reverse causality. Van Lent (2007) argues that theory in accounting is unlikely to address the endogeneity problem, and, on the other hand, econometrics solutions only partially address it. Hence, it is recommended that future management accounting studies may consider state-of-the-art approaches to address endogeneity, such as the natural experiments introduced by Gippel et al. (2015). Finally, it should be noted that due to common responses, and employing a static survey method to gather data, there is also potential for bias.

Despite these limitations, this study's research design, results, and contextual implications contribute to environmental management accounting and strategic management literature in the following important and distinct ways. First, current environmental management accounting literature does not provide clear evidence on the formal managerial processes to implement proactive sustainability strategies as a means of achieving corporate sustainability performance. This study contributes by establishing a link between proactive sustainability strategies and corporate sustainability performance using sustainability control systems. Second, the study advances the use of environmental management accounting applications in the corporate sustainable development process (e.g. Perego and Hartmann, 2009; Schaltegger and Burritt, 2010; Gond et al., 2012; Merchant, 2012; Arjaliès and Mundy, 2013; Bebbington and Thomson, 2013; Schaltegger et al., 2013, Henri et al., 2014, 2015). Third, past sustainability control systems literature in sustainability strategy has largely focused on design characteristics of sustainability control systems and overlooks the use of sustainability control systems to implement sustainability strategy. Referring to the levers of control framework, this study provides empirical evidence to support the use of sustainability control

systems to implement proactive sustainability strategies. In turn, it extends Simons' key proposition that the interplay of the four levers of control positively influences the implementation of proactive sustainability strategies (Arjaliès and Mundy, 2013; Gond et al., 2012). In doing so, the study provides empirical evidence and a comprehensive view of sustainable development and attempt to resolve previous inconclusive findings on the relationship between proactive sustainability strategies and corporate sustainability performance. Finally, the study integrates sustainability control systems applications within the NRBV of the firm, and provides empirical evidence from the developing country context.

The study has important implications for practising managers. Managers should be aware that merely integrating sustainability issues into strategy might not help corporations to achieve corporate sustainability performance goals. Special attention should be given to integrating sustainability into MCS to facilitate the implementation of strategy. It should be noted that the alignment of proactive sustainability strategies and operations of other internal functional departments is crucial for effective strategy implementation. The internal alignment, in turn, will facilitate top management to systematically address external sustainability concerns.

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Chapter 6 : PAPER THREE

SUSTAINABILITY INNOVATION CAPABILITIES AND COMPETITIVE ADVANTAGE: ENABLING AND CONTROLLING USES OF SUSTAINABILITY CONTROL SYSTEMS*

ABSTRACT

This study examines the extent to which enabling and controlling uses of sustainability control systems moderate the relationship between sustainability innovation capabilities and sustainable competitive advantage. Partial Least Squares Structural Equation Modelling is used to analyse survey data collected from top managers in 175 manufacturing and services sectors representing multinational and local organisations operating in Sri Lanka. The study finds that while the enabling use of sustainability control systems positively moderates the relationship between sustainability innovation capabilities and sustainable competitive advantage, in contrast, controlling use of sustainability control systems negatively moderates the relationship. The study compares the results for the manufacturing and services sectors and, contrary to the expectation, finds no moderating impact for the services sector for either controlling or enabling sustainability control systems. The study provides theoretical insights and practical implications concerning the importance of strategic alignment between managerial controls, dynamic capabilities, and competitive advantage in sustainability innovation management in the developing country context.

Keywords: Dynamic capabilities; Sustainable competitive advantage; Sustainability control systems; Sustainability innovation capabilities; Manufacturing and services

6.1 INTRODUCTION

Increasing environmental, social, and economic uncertainties compel organisations to formulate and implement strategies focusing on sustainability innovation capabilities[26] (e.g. Porter and Kramer, 2006; Nidumolu et al., 2009; Sharma, 2014; Glavas and Mish, 2015). Dynamic capabilities that support sustainability innovations may include vision and strategy, organisational intelligence, creativity and management, organisational structures and systems, culture and climate, and management and technology (Lawson and Samson, 2001). Sustainability innovation capabilities are widely regarded as key drivers of sustainable competitive advantage (Hart, 1995; Porter and Kramer, 2006; Nidumolu et al., 2009; Hansen et al., 2009; Sharma, 2014; Bhupendra and Sangle, 2015; Glavas and Mish, 2015). Nonetheless, sustainability innovations are risky, and the commercial success and non-financial sustainability benefits are uncertain, constantly evolving, and dynamically complex (Hansen et al., 2009; Poskela and Martinsuo, 2009; Hart and Dowell, 2010; Sharma, 2014). This creates conflict and ambiguity for organisations in their approaches to managing sustainability innovation capabilities. Failure to effectively manage sustainability innovation capabilities may result in long-term negative consequences, such as losing valuable resources, customers, and competitiveness, and eventually may result in diminished corporate performance (Nidumolu et al., 2009; Poskela and Martinsuo, 2009; Sharma, 2014).

Given the importance of managing sustainability innovation capabilities, the extant literature provides relatively limited evidence about the use of internal managerial processes, such as sustainability control systems[27] that assist the implementation of sustainability innovation capabilities (e.g. Arjaliès and Mundy, 2013; Crutzen and Herzig, 2013; Epstein and Buhovac, 2014). Hence, the aim of this study is to examine the extent to which sustainability control systems impact the relationship between sustainability innovation capabilities and sustainable competitive advantage.

Management control systems (MCS) facilitate two complementary and interdependent roles: (i) They enable employees to seek innovative opportunities and solve problems; and (ii) exert controls over attaining organisational goal (Simons, 1995; Mundy, 2010; Chenhall and

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[26] Sustainability innovations are the innovations "that improves sustainability performance, where such performance includes, social, ecological, and social criteria" (Boons et al., 2013, p. 2). These sustainability innovations include, new products, services and processes, and superior performance (e.g. Lawson and Samson, 2001; Hansen et al, 2009).

[27] Simons (1995, p. 5) defines management control systems as "formal, information-based routines and procedures managers use to maintain or alter patterns in organizational activities". Sustainability control systems are specific applications of management control systems, and a part of environmental management accounting.

Moers, 2015). This study refers to Simons' (1995) four levers of control framework to examine the enabling and controlling uses of sustainability control systems in facilitating the sustainability innovation capabilities.[28] Simons (1995) proposes levers of control namely, belief, interactive, boundary, and diagnostic control systems, to facilitate the formulation and implementation of organisational strategies and capabilities (Simons, 1990, 1994, 1995, 2000). Due to the contrasting nature of controls, Simons (1995) proposes that while the belief and interactive uses create a positive pressure, the boundary and diagnostic uses of levers of control create a negative pressure. This study identifies belief–interactive levers as an enabling use of sustainability control systems, and boundary–diagnostic levers as a controlling use of sustainability control systems (cf. Mundy, 2010).

Despite prior studies suggesting that MCS play a key role in innovation management (Simons, 1995; Bisbe and Otley, 2004; Hansen and Mowen, 2005; Henri, 2006; Masanet-Llodra, 2006; Poskela and Martinsuo, 2009; Bisbe and Malagueño, 2015; Chenhall and Moers, 2015), research examining the use of sustainability control systems in formulating and implementing sustainability innovation capabilities as a means of achieving competitive advantage has been limited (Arjaliès and Mundy, 2013; Crutzen and Herzig, 2013; Epstein and Buhovac, 2014; Chenhall and Moers, 2015). Ferreira et al. (2010) is one of a few studies in the literature finding that environmental management accounting has a positive impact on process innovation, but not on product innovation. In a recent study, Lopez-Valeiras et al. (2015a) examine the use of management accounting techniques in sustainability innovation. They find that while the contemporary management accounting techniques, such as the Balanced Scorecard and benchmarking, have a moderating impact on sustainability innovation and international performance, traditional techniques, such as cost accounting and budgeting, have no impact (Lopez-Valeiras et al., 2015a).

Most of the current studies examining the use of MCS in innovation have extensively contributed to the diagnostic and interactive aspects of the levers of control or individual management accounting techniques (e.g. budgeting), and product and process innovations (Bisbe and Otley, 2004; Henri, 2006; Ferreira et al., 2010; Bisbe and Malagueño, 2015; Chenhall and Moers, 2015; Lopez-Valeiras et al., 2015b). While the examination of the use of individual aspects of levers of control furthers our understanding of the importance of control systems in innovation, such an approach is less likely to provide a comprehensive understanding

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[28] Similar terms used in the literature include: mechanistic-organic; tight-loose; inflexible-flexible; coercive-enabling (e.g. Mundy, 2010; Chenhall and Moers, 2015).

of the use of MCS as a whole, and sometimes leads to inconsistent findings (Chenhall and Moers, 2015). Findings in this study support both theoretical and empirical propositions that the uses of enabling and controlling sustainability control systems moderate the relationship between sustainability innovation capabilities and sustainable competitive advantage. In doing so, this study advances the MCS literature by investigating the use of all four levers of control in managing sustainability innovation capabilities.

Teece et al. (1997, p. 516) propose a dynamic capability view arguing that organisations should "integrate, build, and reconfigure internal and external competences to address rapidly changing environments". The natural-resource-based view (NRBV) of the firm suggests that organisational ability to formulate and implement proactive sustainability strategies and dynamic capabilities leads to sustainable competitive advantage (Hart, 1995; Hart and Dowell, 2010). The primary argument in this study is that a sustainable competitive advantage can be gained by (re)aligning sustainability innovation capabilities with the appropriate uses of enabling and controlling sustainability control systems. This is particularly important because merely developing dynamic capabilities does not necessarily lead to competitive advantage; rather the strategic alignment between the internal and external contextual factors within which dynamic capabilities are formulated and implemented may also impact competitive advantage (Teece et al., 1997; Barreto, 2010; Wilden et al., 2013; Alt et al., 2015; Chenhall and Moers, 2015). Nevertheless, while there is a rich body of literature on the drivers of organisational level dynamic capabilities, and underlying processes and procedures of dynamic capabilities from the micro-foundations perspective, our understanding of the extent to which top management uses the enabling and controlling sustainability control systems to implement sustainability innovation capabilities is limited (Barreto, 2010; Boons et al., 2013; Wilden et al., 2013). This study contributes to the dynamic capabilities literature by examining the impact of the use of these two contrasting managerial processes in sustainability innovation capabilities.

The study employs a survey instrument of 175 top managers in the manufacturing and services sectors of multinational and local organisations operating in Sri Lanka. Sri Lanka provides an important research context to examine sustainability implications with its established reputation for ethical manufacturing practices (Beddewela and Fairbrass, 2015; Perry et al., 2015). Research undertaken in the developing country context identifies opportunities for both multinational and local organisations to gain sustainable competitive advantage by developing sustainability innovation capabilities, but also to support sustainable development by alleviating poverty (Hart, 1995; Prahalad and Hart, 2002; Hart and Dowell,

2010). Hart and Dowell (2010, p. 1472) assert that the "most in-depth treatment of the factors that affect firm success at the developing country is the emerging work on 'embedded innovation' as exemplified by the BoP protocol". Yet, "despite corporate interest and a growing practitioner-oriented literature, however, there is a dearth of scholarly research on BoP" (Hart and Dowell, 2010, p. 1472). This study responds to this demand by providing empirical evidence from a developing country context that supports sustainability innovation capabilities, and its impact on sustainable competitive advantage. The study also responds to recent calls for studies to investigate differences in the implementation of sustainability capabilities between manufacturing and services organisations (Chatha et al., 2015), and the use of MCS in innovation management in services organisations (Chenhall and Moers, 2015).

6.2 BACKGROUND LITERATURE AND HYPOTHESES DEVELOPMENT

Figure 6-1 summarises the conceptual framework and the proposed hypotheses in the study. The framework is conceptually grounded on the NRBV of the firm and the levers of control framework. The study proposes that the enabling use of sustainability control systems (belief and interactive levers) positively, and controlling use of sustainability control systems (boundary and diagnostic levers) negatively, moderate the relationship between sustainability innovation capabilities and sustainable competitive advantage. The following sections discuss the relationships proposed in the conceptual framework.

FIGURE 6-1 FRAMEWORK OF THE STUDY
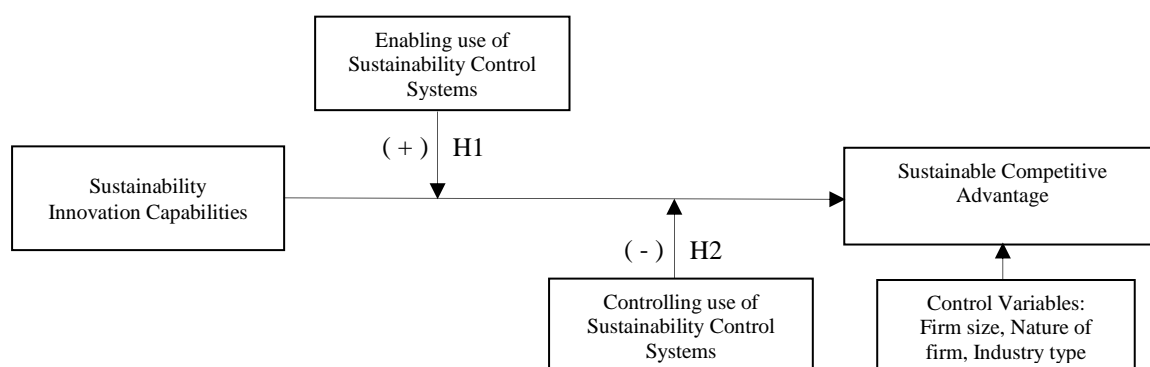
6.2.1 Natural-resource-based view of the firm and sustainability dynamic capabilities

Hoffman (2000, p. 1) defines sustainable competitive advantage as the "prolonged benefit of implementing some unique value creating strategy not simultaneously being implemented by current or potential competitors along with the competitive inability to duplicate the benefits of

this strategy". The resource-based view of the firm suggests that the organisational ability to generate rent earning resources and capabilities leads to sustainable competitive advantage (Barney, 1991). Teece et al. (1997) propose a dynamic capabilities view arguing that the resource-based view of the firm provides limited explanations on how organisations renew sources of competitiveness in responding to the rapidly changing dynamic environment.

The dynamic capabilities view posits that organisations can gain sustainable competitive advantage only if they employ superior strategies and resources in comparison to their competitors in a rapidly changing dynamic environment (Teece et al., 1997). More specifically, the term 'dynamic' refers to organisational ability to renovate competencies to match rapidly moving environmental settings and the term 'capabilities' denotes the role of organisational strategy in suitably deploying internal and external skills, resources, and functional competencies to meet dynamic environmental contexts (Teece et al., 1997). Unlike static competencies that assist organisations to perform their basic operational activities (Eisenhardt and Martin, 2000), dynamic capabilities are active improvements of functional activities, in response to environmental, social and economic changes (Teece et al., 1997). Innovation management has been well-established as a form of dynamic capability that helps organisations to address sustainability challenges (Teece et al., 1997; Lawson and Samson, 2001; Hansen et al., 2009; Hart and Dowell, 2010).

Highlighting the limited scope of the resource-based view of the firm to explain the competitive advantage gained when organisations interact with the natural environment, Hart (1995) proposes the NRBV of the firm. According to Hart (1995), the NRBV of the firm incorporates three proactive sustainability strategies: (i) pollution prevention; (ii) product stewardship; and (iii) sustainable development. Hart (1995) suggests that while the pollution prevention and product stewardship strategies support greater environmental efficiencies, addressing global sustainable development challenges requires a reduction in material and energy consumption in developed economies, and the establishment of new markets in the developing country context. Aragón-Correa and Sharma (2003) claim that proactive sustainability strategies, as proposed by the NRBV of the firm, satisfy the definition of dynamic capabilities. This is because "proactive environmental strategies are dependent upon specific and identifiable processes, are socially complex and specific to organisations, require path-dependent and embedded capabilities, and are nonreplicable or inimitable" (Hart and Dowell, 2010, p. 1473).

Prior literature provides empirical evidence that sustainability innovation capabilities play a critical role in achieving sustainable competitive advantage supported by all three proactive sustainability strategies (e.g. Hart, 1995; Russo and Fouts, 1997; King and Lenox, 2002; Hansen et al., 2009; Hart and Dowell, 2010; Glavas and Mish, 2015). For instance, Hart and Dowell (2010, p. 1471) emphasise that the development of clean technology strategies requires a focus on innovation and future positioning as the metric for success. This implies, in turn, that we build a better understanding of factors that affect the likelihood that firms are willing to invest in innovation, including the degree to which investors affect managerial myopia.

Organisational ability to implement sustainability dynamic capabilities has the potential to generate competitive advantage (Sharma, 2014). However, a sustainability strategy alone is unlikely to create sustainable competitive advantage; rather it must be in combination with other capabilities, particularly sustainability innovation capabilities (Russo and Fouts, 1997; Hart and Dowell, 2010). Hence, Hart and Dowell (2010) identify innovation capabilities and organisational commitment to pollution prevention strategies as complementary assets.

6.2.2 Sustainability innovation capabilities and sustainable competitive advantage

Dynamic capabilities, such as creativity and technology management, harnessing the competence base, knowledge management, and internal organisational processes and procedures can support sustainability innovations (e.g. Lawson and Samson, 2001; Hansen et al., 2009). Organisations with superior product innovation dynamic capabilities are more likely to gain sustainable competitive advantage over organisations with less effective capabilities (Danneels, 2000; Eisenhardt and Martin, 2000). Sustainability innovation capabilities have been increasingly recognised as key drivers in addressing sustainability challenges, in particular in relation to meeting stakeholder demands (Nidumolu et al., 2009; Mariadoss et al., 2011; Sharma, 2014; Maletič et al., 2015). Organisations that adopt innovative procedures and technologies, maintain effective customer relationships, integrate various innovation capabilities (Lokshin et al., 2009), and consider sustainability as innovation's new frontier (Nidumolu et al., 2009) are more likely to address sustainability issues, implement positive attitudes towards green management, and adopt environmental management practices (Hofmann et al., 2012). Hansen et al. (2009, p. 685) assert that "sustainability puts a normative demand on innovation to become more environmentally and socially benign and, at the same, provides a new source of innovations and competitive advantage".

Prior studies also highlight that innovation-flexible organisations use concerns about the environment as a motivation for innovative product development (Crowe and Brennan, 2007; Torugsa et al., 2013), and are more likely to increase financial performance through pollution prevention strategies (King and Lenox, 2002). Nidumolu et al. (2009, p. 58), in this context, note that "sustainability isn't the burden on bottom lines that many executives believe it to be. In fact, becoming environmentally friendly can lower your costs and increase your revenues. That's why sustainability should be a touchstone for all innovation". They further highlight that sustainability serves as a mother lode of innovation that generates both bottom line and top line returns.

Organisational ability to innovate products and services compatible with dynamic sustainability changes in the environment has the potential to assist organisations in achieving long-term sustainable benefits over their competitors (Sharma, 2014). Such organisations may also obtain first-mover advantage in the long run by establishing superior brand recognition and customer loyalty. While sustainability compliance, such as ISO environmental standards, may influence product and process innovations to a certain extent, organisations that integrate sustainability as an innovation dynamic capability that leads to strategic choices may design effective ways to reduce waste, innovative packaging and efficient production systems that competitors find difficult to imitate and substitute (Cronin et al., 2011). Cronin et al. (2011, p. 164) suggest that green sustainability innovation strategies are likely to generate "innovative and technological advances that allow firms to capitalise on both the entrepreneurial and environmentally-friendly strategies rather than merely meeting legal or regulatory standards".

Organisational motivation to integrate sustainability issues into innovation dynamic capabilities would lead to sustainable competitive advantage as these capabilities are rare, valuable, difficult to imitate, and non-substitutable. Studies also argue that dynamic capabilities themselves do not generate competitive advantage as organisations may share similar characteristics that are not regarded as heterogeneous (Eisenhardt and Martin, 2000). Teece (2007) emphasises the necessity of complementary structures for organisations to ensure that dynamic capabilities generate competitive advantage. According to Wilden et al. (2013), establishing an internal control fit with dynamic capabilities enhances performance. Therefore the positive relationship between sustainability innovation capabilities and sustainable competitive advantage is more likely to be influenced by the alignment of internal managerial controls.

6.2.3 Management control systems and sustainability control systems

Organisations use MCS to formulate and implement organisational strategies by planning and controlling inputs, persuading the conversion process and monitoring the outcomes (Langfield-Smith, 1997). More specifically, MCS play a significant role in (i) capturing superior strategies and resources by creating new knowledge, (ii) creating dynamic capabilities, (iii) communicating internally in a more systematic and strategic manner, and (iv) developing new products and services in a systematic and strategic way (Simons, 1990, 1995, 2000; Chenhall, 2003; Henri, 2006; Grafton et al., 2010).

Research in the context of strategy and MCS explores two perspectives: (i) the influence of strategy on MCS (the strategy–MCS relationship); and (ii) the effect of MCS on strategy (the MCS–strategy relationship) (Chenhall, 2003; Kober et al., 2007). In the contingency-based MCS literature, much has been done to examine the first proposition, that is, the strategy–MCS relationship (Langfield-Smith, 1997, 2007; Henri, 2006). However, findings pertaining to the second relationship are inconsistent, with positive, negative, and neutral outcomes (Chenhall, 2003; Henri, 2006). Henri (2006) attributes these inconsistent findings to the use of various definitions, and variation in the conceptualisation and operationalisation of strategy and MCS. These inconsistent findings may also be due to lack of evidence to support the use of MCS with capabilities and strategies in different contexts, and due to limited attention given by prior studies to examining MCS as a whole. As a way of minimising the conflicting outcomes between MCS and the strategy relationship, Henri (2006) proposes that "MCS must be aligned with the capabilities to be effective and consistent with strategic choices". Based on the resource-based view and considering dynamic capability, Henri (2006) argues that MCS do not have a direct impact on sustainable competitive advantage, but an indirect impact through capabilities. Although MCS should be designed to explicitly support organisational strategies, however, our knowledge of the MCS–strategy relationship is somewhat limited (Langfield-Smith, 2007).

Prior research criticises the financially oriented use of MCS for its limited scope to effectively respond to growing sustainability concerns from a wide range of stakeholders (Durden, 2008; Burritt and Schaltegger, 2010). Ball and Milne (2005, p. 324) conclude that "new ideas and tools for management control … are essential in the context of a shift towards sustainability". To address this criticism, sustainability control systems are an emerging theme in the MCS literature (Henri and Journeault, 2010; Gond et al., 2012; Arjaliès and Mundy, 2013; Lueg and Radlach, 2015). The use of sustainability control systems not only supports

organisations to implement sustainability innovation capabilities by disseminating sustainability core values and measuring sustainability performance, but also to minimise sustainability strategic risks and to avoid uncertainties associated with sustainability strategies (Durden, 2008; Henri and Journeault, 2010; Gond et al., 2012; Arjaliès and Mundy, 2013; Rieckhof et al., 2015; Kerr et al., 2015). Moving beyond strategy implementation, the use of sustainability control systems also supports organisations to manage sustainability threats and opportunities, and to respond to stakeholders' sustainability demands by enhancing the transparency and accountability of operational activities (Durden, 2008; Arjaliès and Mundy, 2013).

Recent studies encourage examination of the use of sustainability control systems to facilitate changing organisational needs, including the implementation of sustainability strategies (Gond et al., 2012; Arjaliès and Mundy, 2013; Crutzen and Herzig, 2013; Epstein and Buhovac, 2014). Epstein and Buhovac (2014, p. 95), in this context, propose that "organisations should provide adequate resources for the implementation and control of sustainability strategies. These include setting the appropriate structures for efficient alignment of human resources with sustainability strategies, as well as allocating technological and financial resources". Essentially, sustainability control systems should be aligned with sustainability strategies in order to achieve sustainable competitive advantage through innovation dynamic capabilities (Arjaliès and Mundy, 2013; Crutzen and Herzig, 2013; Epstein and Buhovac, 2014). Nevertheless, the literature does not provide explicit evidence on the impact of different uses of sustainability control systems on the relationship between sustainability innovation capabilities and sustainable competitive advantage.

6.2.3 Moderating impact of sustainability control systems

Enabling use of sustainability control systems

Belief systems communicate organisational philosophy denoted by core values with the aim of inspiring and motivating employees to search, explore, create, and expand efforts in a positive way in fulfilling organisational objectives (Simons, 1995; Widener, 2007; Mundy, 2010). Belief systems consist of disseminating sustainability values and commitment through vision and mission statements, sustainability strategic plans and policies, sustainability reports, organisational-wide conferences, forums, training programs, intranet, websites, and posters (Arjaliès and Mundy, 2013; Alt et al., 2015). Top management can use the belief systems to communicate core values to formulate a shared vision of sustainability, to motivate and inspire

employees around sustainability goals to seek sustainability innovative opportunities (Arjaliès and Mundy, 2013; Kerr et al., 2015).

Interactive control systems are more likely to implement and encourage forward-looking creative ideas and strategic initiatives, and keep interactive relationships amongst employees (Simons, 1995; Widener, 2007). Interactive control systems play an important role in minimising strategic uncertainties associated with strategy and fostering creativity and inspirations: "... senior managers use interactive control systems to build internal pressure to break out of narrow search routines, stimulate opportunity-seeking, and encourage the emergence of new strategic initiatives" (Simons, 1995, p. 93). Widener (2007) asserts that interactive control systems are intended to support organisations to position themselves strategically within a dynamic marketplace. Kober et al. (2007) find that the interactive use of MCS facilitates a change in strategy by fostering discussion and debates, and promoting awareness about the financial environment.

Interactive controls support sustainability strategies by revealing and debating emerging strategies and identifying new sustainability innovative opportunities (Gond et al., 2012; Arjaliès and Mundy, 2013). Sustainability practices that support interactive control systems may include, for instance, top management's focus on sustainability practices, communicating sustainability information between top management and operational managers, and exchanging best practice with stakeholders to share sustainability innovations (Arjaliès and Mundy, 2013; Kerr et al., 2015). Teece (2000, p. 41) discusses important characteristics of enabling use of controls to foster dynamic capabilities as: "non-bureaucratic decision-making – decentralised or possibly autocratic, self-managed where possible; [and] shallow hierarchies to facilitate both quick decision-making and rapid information flow from market to the decision makers". The positive nature of the use of interactive controls tends to encourage and create an environment in which employees can actively engage with sustainability innovation capabilities.

The belief and interactive uses of enabling controls reveal several important characteristics that promote innovation capabilities, such as decentralised decision making, organisational adaptiveness, loose and informal rules and procedures, and free flow of information (Burns and Stalker, 1961). Teece (2007, p.1355) stresses that to "sustain dynamic capabilities, decentralisation must be favoured because it brings top management close to new technologies, the customer, and the market". Prior literature suggests that there is a natural alignment between enabling use of controls and dynamic capabilities (Chenhall and Morris,

1995; Henri, 2006; Wilden et al., 2013). The flexible and open channels of communications promoted by belief and interactive uses of sustainability control systems enable employees to establish fruitful relationships within the organisation and outside as a way of promoting sustainability innovation capabilities. The way in which top management approaches sustainability will essentially create a flexible and encouraging environment for employees to seek sustainability innovative ideas (e.g. Alt et al., 2015).

Belief and interactive uses of sustainability control systems also enhance sustainability innovation capabilities by fostering relational skills, such as supporting capabilities to develop and oversee relationships, obtaining and disseminating information and knowledge, and coordinating flexibility with stakeholders (Henri, 2006). Collaboration between expert and functional managers creates a positive environment to promote innovation and new product development (Miller, 1988; Henri, 2006).

Haugh and Talwar (2010, p. 394) argue that "opportunities for employees to gain practical experience of supporting or working with sustainability initiatives substantially increases their knowledge, interest, and commitment to sustainability". If sustainability learning is not aligned with employees' interests and expectations, sustainability practices are less likely to be successful (Haugh and Talwar, 2010). Interactive use of sustainability control systems also facilitates knowledge dissemination and information communication by (i) focusing strategic uncertainties for which knowledge has a key role to play, (ii) fostering organisational dialogue and debates, and (iii) promoting information exchange (Simons, 1995; Malina and Selto, 2001; Henri, 2006).

As enabling use of controls promotes flexibility, creativity, and responsiveness, organisations may employ effective and efficient strategies. Enabling use of controls would also promote dynamic capabilities through inspiring and motivating employees, including engendering loyalty, encouraging participation, fostering creativity, and supporting responsiveness to increased competitiveness (Schminke et al., 2000). Henri (2006) provides empirical evidence to support the positive influence on innovation capabilities from the interactive use of performance measurement systems. However, Bisbe and Otley (2004) find that while the indirect effect of the interactive use of MCS does not have a significant impact on performance through innovation, the moderating role of MCS is supported. Further, Wilden et al. (2013) find that the impact of dynamic capabilities on performance improves when organisations employ a more organic organisational structure.

In light of the above, the study proposes that the enabling use of sustainability control systems acts as an internal contextual moderator that conditions the extent to which sustainability innovation capabilities impact sustainable competitive advantage. More specifically, the study argues that the relationship between sustainability innovation capabilities and competitive advantage is positively stronger according to the extent of the belief and interactive uses of sustainability control systems.

Hypothesis 1: *The enabling use of sustainability control systems positively moderates the relationship between sustainability innovation capabilities and sustainable competitive advantage.*

Controlling use of sustainability control systems

The purpose of imposing boundary conditions is to avoid employees' high-risk taking behaviours beyond the organisational accepted domain (Simons, 1995; Mundy, 2010). Boundary systems inform particular predefined conditions within which employees are expected to be innovative and creative (Widener, 2007). Moreover, boundary systems emphasise employees' motivation to search new opportunities in a stringent manner by controlling their behaviour (Widener, 2007). Risks associated with implementing sustainability strategies include lack of safety and poor quality of operations, unreliability and inefficiencies of operations and procedures, losing sustainability focused customers, losing market share to sustainability focused competitors, emergence of sustainability substitute products, and negative opinions on the overuse of resources. Boundary systems can be used to manage sustainability risks by setting strategic limits and operational boundaries focusing sustainability plans and activities (Arjaliès and Mundy, 2013). Boundary systems may also consist of sustainability related legal and regulatory compliance, voluntary sustainability compliance (e.g. GRI, UN global compact), regular assessments of sustainability codes of conduct, ethical and professional guidelines, anti-bribery guidelines, guidelines on recommended practices, communities and best practices, and internal sustainability policies, structures and activities (Arjaliès and Mundy, 2013). Imposition of boundary conditions tends to manage sustainability innovation capabilities using more structured and rigid controls.

Organisations also use diagnostic control systems to monitor employees to deliver tasks in line with organisational objectives by constraining their behaviour (Simons, 2000; Henri,

2006; Widener, 2007; Mundy, 2010). Simons (1995, p. 91) states that diagnostic control systems "constrain innovation and opportunity-seeking to ensure predictable goal achievement needed for intended strategies". In doing so, diagnostic control systems compare organisational outcomes with pre-set standards. Therefore, diagnostic use of controls is recognised as a negative force that imposes constraints and emphasises compliance with orders (Henri, 2006). To evaluate the success or failure of any sustainability initiative, organisations should use different sustainability performance measurement indicators, such as energy, water, waste and carbon emissions reduction targets, safety measures, compliance targets, and metrics and indexes to calculate sustainability expenditure (Searcy, 2012). Managers can also use diagnostic controls to manage sustainability critical performance variables by defining and measuring key performance indicators of sustainability activities of operations with internal and external target and benchmarks, and to reveal deviations from their predictions (Arjaliès and Mundy, 2013). Respective diagnostic control systems that measure sustainability performance may consist of environmental management systems, standardised operating processes, Balanced Scorecards, benchmarking sustainability practices with competitors, top management's regular reviews of performance achievements, environmental and social audits, standardised sustainability reporting processes, and use of environmental management tools, such as Hoshin Kanri, Just in Time, Kaizen, and 5S (Arjaliès and Mundy, 2013; Kerr et al., 2015).

Given the inherent nature of negative constraints of boundary and diagnostic uses of sustainability control systems, sustainability innovation capabilities are likely to be negatively impacted by the organisational emphasis on the controlling use of sustainability control systems (cf. Henri, 2006; Mundy, 2010). The existing literature suggests that there is a natural misalignment between the characteristics of the dynamic capabilities and controlling use of sustainability control systems (Chenhall and Morris, 1995; Henri, 2006; Poskela and Martinsuo, 2009; Wilden et al., 2013). This is because boundary and diagnostic uses of sustainability control systems reflect characteristics of mechanistic and traditional control systems, such as (i) tight control of information flow, operations, and strategies, (ii) formal rules and procedures, (iii) highly organised communication procedures, (iv) regulated dissemination of information, and (v) centralised decision making (Burns and Stalker, 1961; Henri, 2006; Poskela and Martinsuo, 2009). The tight and formal use of sustainability control systems provide a mechanistic approach to strategic decision making that results in organisational reluctance to move forward and the need for new innovations.

Top management also uses controlling mechanisms to curb innovations when productivity and efficiency decreases, showing a reactive and restricted response (Miller and Friesen, 1982). By developing constraints to safeguard compliance with organisational norms, codes of conduct and policies, boundary and diagnostic uses of sustainability control systems impede sustainability innovation capabilities as dynamic capabilities are embedded with long-term relationships reflecting mutual commitment, trust, and organisational cultural values. Highly structured channels of communication of boundary and diagnostic use of sustainability control systems may negatively influence sustainability innovation capabilities to gain and disseminate market information, knowledge dissemination, team performance, and to combine organisations in a controlled manner. This is because the successful deployment of innovation capabilities requires unrestricted dissemination of information and flexible channels of communication.

Henri (2006, p. 535) argues that "relying on cybernetic logic and reflecting traditional control systems, diagnostic use of PMS [performance measurement systems] may not represent an adequate means to foster capabilities of ... innovativeness ...". Accordingly, Henri (2006) shows diagnostic use of performance measurement systems negatively impacts dynamic capabilities, including innovativeness. Bisbe and Malagueño (2015) posit that diagnostic use of MCS does not facilitate the rich discussions and learnings that are necessary to deal with the complexities and uncertainties of the creative process. Further, increased routines, centralised decision making, and rigidity embedded with controlling mechanisms tend to obstruct information processing behaviours (Kenney and Gudergan, 2006), and lead to insufficient interactions and blind conformity to strategy implementation. Hence, controlling use of sustainability control systems tends to limit sustainability innovation capabilities by imposing boundaries and restricting risk-taking behaviour, which are necessary conditions to achieve innovation objectives. Further, dysfunctional behaviours (e.g. gaming, smoothing, biasing, focusing, filtering, and illegal acts) associated with the mechanistic nature of boundary and diagnostic controls tend to impede innovation capabilities (Henri, 2006; Poskela and Martinsuo, 2009). As Henri (2006) argues, the corrective actions that are supported by boundary and diagnostic uses of sustainability control systems are not sufficient to gain competitive advantage through dynamic capabilities, yet, new creative and innovative ideas must be generated.

Based on the above discussion, the study argues that the controlling use of sustainability control systems plays a negative role as an internal contextual moderator that conditions the

extent to which sustainability innovation capabilities impact competitive advantage. In particular, the study proposes that the performance impact of sustainability innovation capabilities on competitive advantage is negatively moderated by the extent of boundary and diagnostic use of sustainability control systems.

Hypothesis 2: *The controlling use of sustainability control systems negatively moderates the relationship between sustainability innovation capabilities and sustainable competitive advantage.*

6.3 RESEARCH METHOD

The study used both online and paper based surveys to collect data from large scale business organisations in Sri Lanka and analysed using the PLS-SEM. The study also compares the differences in the implementation of sustainability capabilities between manufacturing and services organisations.

6.3.1 Sample and data collection

The sample consists of 700 multinational enterprises and local organisations operating in Sri Lanka. Sample organisations were selected from databases of listed companies on the Colombo Stock Exchange, the Ceylon Chamber of Commerce, the National Chamber of Commerce Sri Lanka, the International Chamber of Commerce Sri Lanka, and the Board of Investments Sri Lanka. To enhance the likelihood of generalising the findings, the survey was distributed amongst organisations with more than 50 employees, as these organisations are more likely to implement sustainability strategies and formal MCS (Henri, 2006; Pondeville et al., 2013).[29] Both postal and online surveys were sent in early June 2014 to one member of the top management team of each organisation, including chief executive officers, general managers, managing directors, chief operating officers, chief financial officers, sustainability managers or other senior managers engaged in the implementation of sustainability strategies and MCS. The study referred to Dillman's (2000) survey design methods to design and distribute the survey. Of the total 202 (28.85%) surveys returned, 27 were eliminated due to incomplete responses, yielding a total of 175 usable surveys and a 25% response rate.

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[29] Pondeville et al. (2013) identified organisations with more than 20 employees as large-scale organisations and ensured the implementation of environmental MCS.

To replace responses having less than 5% missing values, the study used the mean imputation method proposed by Hair et al. (2014). To assess outliers, non-normality, non-response bias and common method variances the study used SPSS statistical data analysis software. Non-response bias was checked via a two-sample t-test comparing the means of all the measured variables in terms of early and late respondents and postal and online respondents. As shown in Table 6.1, the analysis found no statistically significant differences between early–late and online–postal respondents for all the constructs. To assess the presence of common method bias using all the survey items where the first factor only explains 47.8% of the total variance the study used Harman's single-factor test. This is consistent with the approach proposed by Podsakoff et al. (2003). The results support the absence of significant non-responses and single source bias.

TABLE 6.1 NON-RESPONSE BIAS

Construct	Early (n=109)	Late (n=66)	Online (n=82)	Postal (n=93)
Belief systems	3.56	3.40	3.40	3.59
Boundary systems	3.82	3.70	3.71	3.83
Diagnostic control systems	3.33	3.10	3.19	3.29
Interactive control systems	3.39	3.19	3.29	3.34
Innovation capabilities	3.83	3.83	3.90	3.77
Sustainable competitive advantage	3.73	3.84	3.73	3.81
Instrumental variable	3.92	4.12	4.00	3.98

Table 6.2 depicts the demographic details of the sample organisations and respondents. Of the participants 78% were from local organisations and 22% from multinational enterprises. Manufacturing organisations represent 45% of the total of 175 participating organisations and 55% are from the services sector. Of the respondents 68% represent chief executive officers, managing directors, general managers, divisional directors or chief financial officer positions, and 28% were senior managers and heads of department. Fifty-nine per cent of respondents have over 10 years of professional experience, and 61% of respondents were over 40 years of age.

TABLE 6.2 DEMOGRAPHIC PROFILE OF ORGANISATIONS AND RESPONDENTS

Item	Categories	%
Profile of organisations:		
Nature of company	Local	78
	MNEs	22
Industry category	Manufacturing	45
	Services	55
Employees	Below 100	17
	101–1,000	47
	1,001–10,000	29
	Above 10,000	7
Profile of respondents:		
Position	CEO/MD/GM	39
	Directors/ CFOs	29
	Senior managers	28
	Managers	4
Educational background	PhD	3
	Masters	50
	Bachelors	18
	Professional	29
Place of education	Local	78
	Overseas	22
Experience	Below 5 years	23
	5–10 years	18
	10–20 years	36
	Above 20 years	23
Gender	Male	85
	Female	15
Age	Below 30 years	11
	30–40 years	29
	41–50 years	29
	Above 50 years	31

6.3.2 Measures

The study uses both reflective and formative measurements. The study developed and validated measures of the variables in several ways. First, based on an intensive review of the literature all the survey items were adapted with necessary amendments to the sustainability dynamic capabilities and sustainability control systems context. Second, a pilot survey was given to 25 academics and researchers in the field of management accounting and corporate sustainability. Third, the survey instruments were assessed and approved by the Human Research Ethics Committee of the university at which the research was undertaken. Finally, the study examined the enabling and controlling uses of sustainability control systems as second-order hierarchical factors using a repeated indicator approach (Hair et al., 2014). The use of second-order constructs helps to reduce the complexity of the structural equation model (SEM) model by reducing the number of relationships between sustainability control systems and sustainability capabilities (Hair et al., 2014).

All the survey measurement items were measured using a 5-point scale. The study adapted 23 items to measure the sustainability control systems based on the existing literature (Henri, 2006; Widener, 2007; Arjaliès and Mundy, 2013): six items for belief systems, five items for boundary systems, six items for diagnostic control systems, and six items for interactive control systems. The study conceptualises the enabling and controlling use of sustainability control systems as a Type II multidimensional (reflective–formative) second-order hierarchical construct for several reasons (Tenenhaus et al., 2005; Ringle et al., 2012). First, the levers of control literature proposes that while the belief and interactive uses of levers of control create a positive force, the boundary and diagnostic uses of levers of control create a negative force on organisational performance (Simons, 1995; Henri, 2006; Mundy, 2010; Widener, 2007). Second, due to the positive and negative nature of enabling and controlling uses of controls, the pair is not interchangeable and explains opposite characteristics of the sustainability control systems. Third, each of the four levers represent levers of control as a whole, however, they remain essential parts of levers of control at a more abstract level. Dropping one of these levers will alter the overall meaning of enabling and controlling nature of controls (Speklé et al., 2014). Therefore, studies examining the contrasting uses of levers of control need to employ formative constructs (e.g. Speklé et al., 2014; Bisbe and Malagueño, 2015). Five items to measure sustainability innovation capabilities were adapted from Henri (2006). As suggested by Weerawardena (2003), 12 items were adapted to measure sustainable competitive advantage. The study included three control variables, namely organisational size, industry type, and nature of industry, that seem to have an impact on the implementation of sustainability practices and sustainable competitive advantage (e.g. Jones, 1999; Henri and Journeault, 2010; Lisi, 2015). The study measured organisational size in terms of the number of employees, the nature of organisations in terms of multinational and local, and industry type in terms of manufacturing and services (e.g. Jones, 1999; Henri and Journeault, 2010; Lisi, 2015).

6.3.3 Assessment for endogeneity

Endogeneity is likely to be a concern in this study because of the simultaneous causality. While the study predicts a positive impact of sustainability innovation capabilities on sustainable competitive advantage, on the other hand, competitive advantage is also regarded as an antecedent of sustainability motivations and decision making (e.g. Lisi, 2015). To account for endogeneity problems the study used an instrumental variable approach (Larcker and Rusticus, 2010). The study measured the instrumental variable using a three-item construct that measures sustainability regulatory compliances (see Table 6.4). A valid instrumental variable (i) must not

be correlated with the equation's disturbance process, and (ii) must be highly correlated with the endogenous repressors (Larcker and Rusticus, 2010). Theoretically, sustainability regulations (e.g. environmental regulations, quality standards) seem to directly impact innovation capabilities (Hansen et al., 2009), but are less likely to directly impact sustainable competitive advantage as they are standard practices, but not unique competencies (Barney, 1991). Table 6.3 shows the statistical analyses used to assess the validity of the instrumental variable.

The study used Hansen's J statistics and Sargan's tests to assess the validity of the instrumental variable by referring to over-identifying restrictions (Sargan, 1958; Hansen, 1982). Hansen's J statistics (0.001, p-value 0.9750) and Sargan's test (0.001, p-value 0.9710) confirm the non-rejection of the null hypothesis, and validating the use of sustainability control systems as the instrumental variable, which is uncorrelated with the disturbance process. The study assessed the under-identification tests by referring to Anderson canon. corr. LM statistic (124.456, p-value 0.001) and Kleibergen-Paap rk LM statistic (42.017, p-value 0.001) (Kleibergen and Paap, 2006). Shown in Table 6.3, these two statistics reject the null hypothesis at $p<0.01$ level, further validating the use of the instrument variable. The study reports the weak identification test statistics of Cragg-Donald Wald F statistic and Kleibergen-Paap rk Wald F statistic together with Stock-Yogo's critical values (Cragg and Donald, 1993; Stock and Yogo, 2004; Kleibergen and Paap, 2006). The values of Cragg-Donald Wald F statistic (201.912) and Kleibergen-Paap rk Wald F statistic (205.717) are well above the Stock-Yogo's critical values at all the levels (10%, 15%, 20%, and 25%) of maximal IV size (Stock and Yogo, 2004). These results confirm the rejection of the null hypothesis of under-identification, confirming the weak instrument validity of the instrumental variable. As Table 6.3 reports, the study also used an F-test to verify the validity of the instruments. The F-test statistic (201.91) is significant at $p<0.001$. This supports the rejection of the null hypothesis that the instrument variable is uncorrelated with the endogenous variables.

The study used the Durbin-Wu-Hausman specification test to assess the existence of endogeneity in the PLS-SEM model (Hausman, 1978). Small chi-square values (0.73) and insignificant p-values ($p=0.3914$) of Hausman tests confirm the non-rejection of the null hypothesis, suggesting that the individual effects are uncorrelated with other regressors. Accordingly, the above specification tests provide evidence to support the absence of significant endogeneity problems in the PLS-SEM model.

TABLE 6.3 INSTRUMENTAL VARIABLE ESTIMATIONS AND DURBIN-WU-HAUSMAN ASSESSMENT FOR ENDOGENEITY

Underidentification tests:		
Anderson canon. corr. LM statistic[1]	Chi-sq(2)=124.456	P-value = 0.0000
Kleibergen-Paap rk LM statistic[2]	Chi-sq(2)=42.017	P-value = 0.0000
Weak identification tests:		
Cragg-Donald Wald F statistic[1]	201.912	
Kleibergen-Paap rk Wald F statistic[2]	205.717	
Stock-Yogo critical values[1]		
10% maximal IV size	19.93	
15% maximal IV size	11.59	
20% maximal IV size	8.75	
25% maximal IV size	7.25	
Overidentification tests:		
Hansen J-statistic[2]	Chi-sq(1)=0.001	P-value = 0.9750
Sargan statistic[1]	Chi-sq(1)=0.001	P-value = 0.9710
F-test[3]	201.91	P-value = 0.0000
Durbin-Wu-Hausman assessments for endogeneity:		
Durbin-Wu-Hausman chi-sq test	Chi2(1)=0.73	P-value = 0.3914

Note: [1]=IV (2SLS) estimation; [2] = 2-Step GMM estimation; [3]= First-stage regressions

6.4 RESULTS

6.4.1 Analysis and results

To test the model the study used PLS-SEM analysis (SmartPLS Version 3.0). PLS-SEM application facilitates the predictive understanding of the moderating impact of sustainability control systems on the relationship between sustainability innovation capabilities and sustainable competitive advantage. PLS-SEM simultaneously estimates multiple and interrelated dependent relationships between variables and latent constructs. PLS-SEM analysis avoids the number of restraints encountered in the covariance-based SEM in terms of distributional properties, measurement level, sample size, model complexity, identification and factor indeterminacy (Chin, 1998). Van der Stede et al. (2005) noted that the mean and median sample size in empirical survey-based management accounting studies is 239 and 125, respectively. Therefore, PLS-SEM is suitable in this study with 175 samples.

6.4.2 Measurement model

To verify the reliability (e.g. indicator reliability of construct measures and internal consistency) and validity (e.g. convergent validity and discriminant validity) of reflective measures the study examined the acceptability of the measurement model (Chin, 1998, Tenenhaus et al., 2005). As depicted in Table 6.4, the factor loadings were above 0.7 except one item under the sustainable competitive advantage (Gaining gross profits higher than the industry average .651) which is lower than 0.70 but greater than 0.65 (Hulland, 1999). Two items measuring innovation capabilities, which were designed to capture reverse correlations,

with a factor loading less than 0.5 were deleted. Ensuring the acceptance of convergent validity (Chin, 1998, 2010), the analysis found that values of Cronbach's Alpha, CR, and Average Variance Extracted (AVE) were above the acceptable threshold of 0.7, 0.7, and 0.5, respectively (Nunally and Bernstein, 1978; Fornell and Larcker, 1981). In particular, all the first-order constructs of enabling and controlling use of sustainability control systems meet the reliability criteria of Cronbach's Alpha (lowest .885), CR (lowest .908) and AVE (lowest .581). As reported in Table 6.4, both enabling (Alpha: .939, CR: .947, AVE: .601) and controlling (Alpha: .927, CR: .938, AVE: .581) use of sustainability control systems second-order constructs exceed the acceptable thresholds of measurement criteria. Unlike reflective measures, a different set of measurement criteria are required to assess the second-order formative constructs (Hair et al., 2014). The study used Variance Inflation Factors to test for multicollinearity (Hair et al., 2014). As shown in Table 6.4, Variance Inflation Factors are well below the acceptable norm of 5 (Hair et al., 2011). Further, all the weights are significant at $p<0.01$. The measurement criteria adopted for validating the use of enabling and controlling use of sustainability control systems as reflective–formative second-order constructs can be considered acceptable.

TABLE 6.4 PSYCHOMETRIC PROPERTIES FOR FIRST-ORDER CONSTRUCTS

Constructs and respective indicators	1st order Loadings[a]	2nd order Loadings[b]

Constructs and respective indicators	1st order Loadings[a]	2nd order Loadings[b]
Enabling use of sustainability control systems *Alpha: .939 CR: .947 AVE: .601*		
Belief systems *Alpha: .885 CR: .913 AVE: .636 Weights: 484*** VIF: 2.70 t: 25.48 Mean: 3.50 SD:.845* *Please indicate the extent to which your company uses the following mechanisms to communicate sustainability core values.*		
Vision and mission statements	.792	.746
Strategic plans and policies	.836	.801
Sustainability reports, corporate social responsibility reports, annual reports etc.	.754	.662
Company-wide conferences, forums, workshops and training sessions etc.	.840	.748
Intranet, websites, posters, booklets etc.	.795	.717
Top management communications (e.g. minutes of Board meetings)	.762	.688
Interactive control systems *Alpha: .934 CR: .948 AVE: .755 Weights: 591*** VIF 3.96 t: 29.92 Mean:3.32 SD: .935* *Please indicate the extent to which your company uses the following mechanisms for managing sustainability related uncertainties.*		
Top management regularly pays attention to sustainability control practices	.901	.845
Top management regularly interprets information on sustainability practices	.903	.863
Operating managers are frequently involved in sustainability practices	.891	.831
Regular meetings with top sustainability managers and operational managers	.893	.847
Exchange with stakeholders of best practices to share sustainability innovations	.884	.830
Use of intranet systems for communities of practitioners	.730	.689
Controlling use of sustainability control systems *Alpha: .927 CR: .938 AVE: .581*		
Boundary systems *Alpha: .900 CR: .927 AVE: .718 Weights: .512*** VIF: 3.28 t: 28.83 Mean: 3.77 SD: .845* *Please indicate the extent to which your company adheres to the followings.*		
Regular assessments of sustainability code of conducts	.861	.796
Ethical and professional guidelines	.773	.672
Guidelines on sustainability related best practices	.924	.863
Global Reporting Indicator (GRI)	.763	.740
Internal sustainability policies, structures and activities	.903	.845
Diagnostic control systems *Alpha:.878 CR: .908 AVE:.624 Weights: .558*** VIF: 3.70 t: 32.43 Mean: 3.24 SD: .984* *Please indicate the extent to which your company uses the following mechanisms to evaluate sustainability performance.*		
Standardised reporting processes (e.g. GRI and UN Global compact)	.779	.756
Environmental Management Systems (EMS)	.853	.790
Benchmarking sustainability practices with competitors	.780	.735
Top management's reviews of performance achievements	.799	.775
Environmental and social audits (both Internal and external)	.825	.755
Use of management tools (e.g. Kaizen, Hoshin Kanri, 5s, Just in Time)	.700	.630
Innovation capabilities *Alpha: .875 CR: .923 AVE: .799 Mean: 3.83 SD:.628* *Please indicate the extent to which the following statements are applicable to your company.*		
People are penalised for new sustainability ideas that do not work (Reverse Correlation)	Deleted	
Sustainability innovations are readily accepted in project management	.896	

Sustainability technical innovations (research results) are readily accepted	.895
Sustainability innovations are perceived as too risky and are resisted (Reverse Correlation)	Deleted
Management actively seeks sustainability innovation and ideas	.891

Sustainable competitive advantage
Alpha: .944 CR: .952 AVE: .644 Mean: 3.78 SD:.719
Please indicate the extent to which your company performed better in the following elements as compare to your competitors.

Gaining access to new markets	.822
Increasing market share	.787
Increasing customer satisfaction	.796
Gaining a higher return on investment	.706
Gaining gross profits higher than the industry average	.651
Product and service innovations	.845
Process innovations	.842
Managerial innovations	.849
Capability to learn through internal experimental activities	.809
Capability to acquire knowledge and technology through external links	.833
Sustainability capabilities	.861

Instrumental variable
Alpha: .650 CR: .809 AVE: .587 Mean: 3.99 SD: .786

Risks of non-compliance with legal and voluntary requirements	.700
Sustainability related legal and regulatory compliances (e.g. Environment Protection Licences – EPL)	.818
Emergence of new sustainability regulations	.781

[a,b] All the loadings and weights are significant at 0.01 (2-tailed).

Confirming the discriminant validity of the model, as shown in Table 6.5 the square root of the AVE was greater than the respective correlations between constructs (Fornell and Larcker, 1981; Chin, 1998, 2010; Hulland, 1999).

TABLE 6.5 Intercorrelations of the latent variables for the first-order constructs and square root of AVE

Constructs	1	2	3	4	5	6	7
1. Innovation capabilities	.894						
2. Belief systems	.582	fm[a]					
3. Interactive control systems	.725	.728	.fm				
4. Boundary systems	.644	.759	.765	.fm			
5. Diagnostic control systems	.694	.712	.833	.746	.fm		
6. Sustainable competitive advantage	.559	.547	.550	.489	.567	.803	
7. Instrumental variable	.549	.590	.662	.691	.665	.444	.766

[a]formative constructs.

Cross-loadings, as presented in Table 6.6, support discriminant validity amongst constructs by revealing that no item is loaded higher on any other construct (Chin, 1998). While the Fornell-Larcker criteria and cross-loadings are the dominant approaches to assessing discriminant validity in variance-based SEM, the study further assesses discriminant validity by conducting a chi-square difference test and confidence interval analysis (Anderson and Gerbing, 1988).

TABLE 6.6 CROSS-LOADINGS FOR ASSESSMENT OF DISCRIMINANT VALIDITY

	Belief	Boundary	Diagnostic	Interactive	Innovation	SCA	Instrumental
Item 1	**.894**	.462	.601	.539	.558	.409	.432
Item 2	**.898**	.457	.614	.534	.600	.504	.509
Item 3	**.889**	.624	.715	.643	.688	.567	.519
Item 1	.515	**.792**	.613	.635	.585	.464	.491
Item 2	.563	**.836**	.671	.675	.623	.466	.525
Item 3	.356	**.754**	.508	.591	.489	.313	.368
Item 4	.438	**.840**	.578	.619	.587	.412	.492
Item 5	.468	**.795**	.559	.575	.570	.511	.431
Item 6	.423	**.762**	.537	.528	.543	.440	.504
Item 1	.640	.647	**.901**	.726	.737	.499	.619
Item 2	.642	.681	**.903**	.689	.743	.525	.613
Item 3	.627	.631	**.891**	.667	.740	.454	.583
Item 4	.675	.659	**.893**	.681	.765	.492	.558
Item 5	.669	.635	**.884**	.658	.746	.489	.605
Item 6	.516	.531	**.730**	.553	.603	.402	.460
Item 1	.562	.669	.677	**.861**	.639	.357	.575
Item 2	.429	.482	.513	**.773**	.494	.366	.641
Item 3	.602	.699	.715	**.924**	.697	.470	.652
Item 4	.488	.618	.588	**.763**	.627	.414	.474
Item 5	.626	.725	.723	**.903**	.685	.457	.592
Item 1	.481	.599	.603	.631	**.779**	.392	.437
Item 2	.571	.571	.675	.616	**.853**	.440	.546
Item 3	.564	.536	.657	.582	**.780**	.471	.583
Item 4	.639	.606	.727	.636	**.799**	.571	.543
Item 5	.559	.573	.691	.578	**.825**	.429	.533
Item 6	.467	.482	.591	.476	**.693**	.374	.514
Item 1	.399	.427	.395	.339	.434	**.822**	.371
Item 2	.381	.438	.401	.380	.425	**.787**	.341
Item 3	.424	.408	.390	.381	.410	**.796**	.388
Item 4	.329	.383	.353	.288	.384	**.706**	.270
Item 5	.254	.353	.294	.231	.320	**.651**	.214
Item 6	.469	.463	.431	.383	.458	**.845**	.366
Item 7	.482	.431	.455	.427	.461	**.842**	.362
Item 8	.458	.418	.455	.420	.475	**.849**	.329
Item 9	.542	.400	.464	.387	.454	**.809**	.320
Item 10	.490	.450	.472	.411	.489	**.833**	.443
Item 11	.585	.601	.636	.561	.610	**.861**	.448
Item 1	.340	.397	.392	.507	.424	.267	**.694**
Item 2	.433	.407	.496	.509	.472	.349	**.818**
Item 3	.473	.538	.607	.572	.612	.390	**.781**

Table 6.7 presents the results of the pairwise tests comparing the unconstrained and constrained models. Chi-square differences ranging from 47.40 to 199.53, each with one degree of freedom, are statistically significant at $p<0.01$. Significant lower chi-square values for the unconstrained model support discriminant validity amongst all the compared dimensions. Anderson and Gerbing (1988) also suggest confidence interval analysis (±two standard errors) as a complementary assessment of discriminant validity. This is to determine whether the correlation estimate between the two factors includes 1.0. As depicted in the last column in Table 6.7, the absence of value 1.0 in confidence intervals confirms the discriminant validity. Accordingly, the Fornell-Larcker Criterion, cross-loadings, chi-square difference test and

confidence interval analysis all provide sufficient evidence to support the discriminant validity amongst seven dimensions examined in the study.

TABLE 6.7 CHI-SQUARE DIFFERENCE AND CONFIDENCE INTERVAL ASSESSME FOR DISCRIMINANT VALIDITY

Dimensions compared		$\chi 2$ Constrained	$\chi 2$ Unconstrained	$\chi 2$ Difference	φ Estimates	Confidence interval
Belief	Boundary	290.80(44)[a]	140.66(43)[a]	150.14(1)[a]	.841(.0307)[b]	[.780, .902]
	Diagnostic	273.60(54)	152.81(53)	120.79(1)	.798(.0379)	[.722, .874]
	Interactive	303.49(55)	172.55(54)	130.94(1)	.796(.0351)	[.726, .866]
	Innovation	162.84(27)	97.25(26)	65.59(1)	.649(.0544)	[.540, .758]
	SCA[c]	509.77(119)	449.01(118)	60.76(1)	.593(.0560)	[.481, .705]
Boundary	Diagnostic	315.79(44)	178.53(43)	137.26(1)	.816(.0337)	[.749, .883]
	Interactive	282.88(44)	128.60(43)	154.28(1)	.820(.0303)	[.759, .881]
	Innovation	141.66(20)	53.48(19)	88.18(1)	.706(.0467)	[.613, .799]
	SCA	451.61(104)	404.21(103)	47.40(1)	.520(.0602)	[.400, .640]
Diagnostic	Interactive	356.34(54)	156.81(53)	199.53(1)	.906(.0217)	[.863, .949]
	Innovation	179.66(27)	75.15(26)	104.51(1)	.776(.0414)	[.693, .859]
	SCA	486.77(119)	421.43(118)	65.34(1)	.612(.0543)	[.503, .721]
Interactive	Innovation	231.73(27)	112.91(26)	118.82(1)	.786(.0372)	[.712, .860]
	SCA	517.53(119)	455.58(118)	61.95(1)	.578(.0546)	[.469, .687]
Innovation	SCA	414.43(77)	355.31(76)	59.12(1)	.596(.0563)	[.483, .709]

[a]degree of freedom in parentheses. [b]standard error in parentheses. [c]sustainable competitive advantage

6.4.3 Structural model

Standardised betas (β) for the path coefficients measure the strength and direction of the significance of the structural model. SmartPLS employs the bootstrapping procedure to predict the significance of the relationships by referring to t–statistics together with estimates, means, and standard errors. Following Chin (1998) and Hair et al. (2014), the study used 5,000 bootstrapping resamples as PLS does not facilitate distributional assumptions. In the SmartPLS analysis, the study used a path weighting scheme to estimate parameters as this generates the highest coefficient of determination (R^2) for endogenous constructs, and specifically, path models that include second-order hierarchical constructs are recommended (Hair et al., 2014). SmartPLS facilitates three options to test the moderating impact: (i) product indicator approach; (ii) two-stage approach; and (iii) orthogonalisation approach. The study selected the two-stage approach as this method applies the latent variable scores of the predictor variable and moderator construct from the main effects model. Further, these latent variable scores calculate the product indicator for the second stage analysis that involves the interaction term in addition to the predictor and moderator variable (Henseler and Chin, 2010; Hair et al., 2014). The study used the standardised option to calculate the product terms of the interaction effect as it uses the standardised data. If the interaction calculation method is the two-stage approach, all product term generation options (mean-cantered, unstandardised and standardised) generate

similar results as components of the product term calculations are standardised (Henseler and Chin, 2010; Hair et al., 2014). Table 6.8 depicts the PLS-SEM and bootstrapped parameter estimates for the structural paths.

TABLE 6.8 STRUCTURAL MODEL ASSESSMENT

Paths	Model 1 (Full model)	Model 2 (Manuf; industry)	Model 3 (Services industry)
Main paths			
Innovation capability → Competitive advantage	.212**	.308**	.171
Enabling use of sustainability control systems → Competitive advantage	.409**	.333	.422*
Controlling use of sustainability control systems→ Competitive advantage	.075	.039	.092
Moderating impacts			
Innovation * Enabling use of sustainability control systems → Competitive advantage (H1)	.408**	.506**	.206
Innovation * Controlling use of sustainability control systems → Competitive advantage (H2)	−.342*	−.444*	−.123
Control variables			
Organisational size → Competitive advantage	−.067*	.046	−.103*
Nature of organisation → Competitive advantage	−.107	−.118	−.074
Industry type → Competitive advantage	.042		
Model fit assessment			
R^2 – Competitive advantage	.444	.533	.403
Q^2 – Competitive advantage	.272	.303	250
Effect size f^2			
Enabling use of sustainability control systems → Competitive advantage	.099	.163	.065
Controlling use of sustainability control systems→ Competitive advantage	.054	.139	.008
Effect size q^2			
Enabling use of sustainability control systems → Competitive advantage	.047	.069	.033
Controlling use of sustainability control systems→ Competitive advantage	.026	.057	.001

***Significant at 0.01 (2-tailed), **Significant at 0.05 (2-tailed), *(Significant at 0.1) (2-tailed). Effect size: f^2 and q^2 .02=Small, .15=Medium .35=Large).

Supporting Hypothesis 1, the model 1 (full model) in Table 6.8 shows a positive moderating impact of the enabling use of sustainability control systems on the relationship between innovation capabilities and sustainable competitive advantage (β=.408; t=2.356; p<0.05). The industry analysis reveals that while the enabling use of sustainability control systems positively and significantly moderates the relationship in the manufacturing industry (model 2) (β=.506; t=2.297; p<0.05), the services industry (model 3) does not experience a significant impact, but only a positive relationship (β=.206; t=.883). Hypothesis 2, in which the study predicted a negative moderating impact of controlling use of sustainability control systems on the

relationship between sustainability innovation capabilities and competitive advantage, is supported at $p<0.10$ ($\beta=-.342$; $t=1.845$). The study also analysed the impact in manufacturing and services organisations separately. As reported in Table 6.8, while controlling use of sustainability control systems negatively and significantly moderates the relationship in the manufacturing sector ($\beta=.444$; $t=2.297$; $p<0.10$), the impact is insignificant in the services sector, but the relationship is negative ($\beta=-.123$; $t=.520$).

Further, sustainability innovation capabilities show a positive significant impact on sustainable competitive advantage at $p<0.05$ ($\beta=.212$; $t=2.308$). Consistent with the above results, while the manufacturing sector reveals a positive significant impact between sustainability innovation capabilities and sustainable competitive advantage at $p<0.05$ ($\beta=.308$; $t=2.480$), the relationship is insignificant in the services sector ($\beta=.171$; $t=1.225$). Following Henri (2006), the study does not expect a direct relationship between sustainability control systems and sustainable competitive advantage. Amongst the control variables, as depicted in Table 6.8, only the organisational size is significantly associated with competitive advantage, however, the relationship is negatively associated.

To assess the predictive capabilities of the PLS-SEM model, as reported in Table 6.8, the study used variance-based distribution-free measures. The R^2, which measures the predictive accuracy, is the central criterion for judging the quality of the PLS-SEM (Chin, 1998). The R^2 value of sustainable competitive advantage is moderate in all three models (full model: $R^2=.444$, manufacturing: $R^2=.533$, and services: $R^2=.403$). The cross-validated redundancy measure (Q^2) assesses the predictive relevance of the model. The Stone-Geisser's Q^2 value was calculated by referring to a blindfolding sample re-use technique. Q^2 values larger than zero for a particular endogenous construct indicate the path model's predictive relevance of the construct. Q^2 values for sustainable competitive advantage in all the models is medium (full model: $Q^2=.272$, manufacturing: $Q^2=.303$, and services: $Q^2=.250$). The effect size (f^2) is a measure of the impact of a particular exogenous construct on an endogenous construct (Cohen, 1988; Hair et al., 2014). While the f^2 of exogenous constructs on sustainable competitive advantage is medium in the manufacturing industry, it is, however, small in the other two models. The q^2 assesses the relative impact of exogenous variables on an endogenous variable by taking into account the changes in Q^2 (Chin, 1998). The q^2 effect size for the predictive relevance of all exogenous variables is small. Accordingly, these assessment measures provide sufficient evidence on the model fit (Tenenhaus et al., 2005).

6.5 DISCUSSION AND CONCLUSION

As hypothesised, the study finds that the enabling use of sustainability control systems positively moderates the relationship between sustainability innovation capabilities and sustainable competitive advantage, and, on the other hand, controlling use of sustainability control systems negatively moderates the relationship. However, contrary to the expectation, the industry comparison reveals that both moderating impacts are not significant in the services industry. The study also finds that while the sustainability innovation capabilities are significantly related to sustainable competitive advantage in the manufacturing industry, the relationship is insignificant in the services sector. The findings are consistent with Perry et al. (2015) and Beddewela and Fairbrass (2015) who find that local and multinational manufacturers operating in Sri Lanka have taken a number of constructive steps to address sustainability challenges by balancing the complexities of large-scale buyers' sustainability requirements, managing the internal workforce, and implementing corporate social responsibility practices. In contrast, the insignificant direct impact of sustainability innovation capabilities on competitive advantage and the insignificant moderating impacts of sustainability control systems in the services sector may be partly due to relatively (i) less institutional and stakeholder pressures for services organisations to implement sustainability practices, and (ii) less environmental impacts of services operations that delay the implementation of sustainability innovations capabilities in comparison to manufacturing organisations.

In light of these findings, this study provides several contributions to the literature in terms of (i) examining the use of sustainability control systems to facilitate sustainability innovation capabilities, (ii) operationalising sustainability innovation capabilities, and (iii) providing evidence from both the manufacturing and services sectors in the developing country context. The study extends Simons' (1995, 2000) argument that the belief and interactive uses of levers of control create a positive pressure, and, in contrast, the boundary and diagnostic uses of levers of control create a negative pressure in managing sustainability innovation capabilities. The finding that enabling use of sustainability control systems positively improves the direct effect of sustainability innovation capabilities on competitive advantage is consistent with prior MCS, innovation and dynamic capabilites literatures, finding that organic organisational structure improves the relationship between dynamic capabilites and performance (Wilden et al., 2013), interactive controls positively moderate the relationship between product innovation and performance (Bisbe and Otley, 2004), value creating and interactive control systems have a significant impact on the innovation process (Bisbe and Malagueño, 2015), interactive use of performance measurement systems fosters innovativeness

capabilitites (Henri, 2006), and interactive use of MCS facilitates change in strategy (Kober et al., 2007). While the findings are also consistent with Hansen and Mowen's (2005) proposition that the use of environmental management accounting fosters product innovation, the findings are contradictory to Ferreira et al. (2010) in that the use of environmental management accounting does not impact product innovation. Results in this study also help to resolve prior inconclusive evidence on the relationship between MCS and levels of innovation (Bisbe and Otley, 2004; Bisbe and Malagueño, 2015; Chenhall and Moers, 2015).

Supporting the second hypothesis, the study finds that controlling use of sustainability control systems negatively moderates the relationship between sustainability innovation capabilities and sustainable competitive advantage. This is consistent with Henri (2006) that the diagnostic use of performance measurement systems exerts a negative pressure on capabilitites. This finding sheds light on the sustainability control systems literature in revealing the impediments that prevent organisations achieving sustainability innovation goals. The findings also provide an alarming message for organisations that impose rigid and mechanistics managerial controls to manage sustainability innovation capabilities.

In comparison with prior studies that mostly examine the use of sustainability control systems in the implementation of sustainability strategies through conceptual and case studies (Gond et al., 2012; Arjaliès and Mundy, 2013; Rieckhof et al., 2015), the study adds to the literature explicit evidence that enabling and controlling uses of sustainability control systems have opposite impacts on the relationship between sustainability innovation capabilities and sustainable competitive advantage. As a whole, the findings provide explicit insights and support the proposition that the enabling use of sustainability control systems have the potential to foster sustainable development by promoting sustainability innovation capabilities, whereas controlling use of sustainability control systems hinders sustainability innovation capabilities (e.g. Masanet-Llodra, 2006).

This study also has implications for the ethical conduct of businesses in effectively managing sustainability innovation capabilities. More particularly, consistent with Lindsay et al. (1996), it can be argued that a significant positive moderating impact of enabling use of sustainability control systems reflects the extent to which top management employs ethics related control mechanisms. The belief and interactive uses of sustainability control systems reflect a number of control tools that promote ethical decision making (e.g. employee participation in decision making, empowerment, and top management's regular communication

and meetings with operational managers) (Lindsay et al., 1996). As Lindsay et al. (1996) discuss, it should be noted that ethics related control mechanisms are not only confined to enabling use of sustainability control systems, but support controlling use of sustainability control systems as well. Examples of such controls include ethical and professional guidelines, codes of conduct, and reward systems (Lindsay et al., 1996). This study shows explicit evidence that the top management's increased emphasis on such controls has a negative moderating impact on the relationship between sustainability innovation capabilities and competitive advantage.

The contribution of the study is in extending the propositions of the NRBV of the firm and dynamic capabilities literature in the sustainability management context. This is achieved by proposing that sustainability innovation capabilities lead to sustainability strategic choices and, in turn, enhance sustainable competitive advantage (Hart, 1995; Teece et al., 1997; Sharma, 2014; Maletič et al., 2015). As indicated above, the results suggest that the extent to which organisations align enabling use of sustainability control systems improves the direct impact of sustainability innovation capabilities on sustainability competitive advantage. This supports the view that dynamic capabilities per se do not necessarily lead to competitive advantage, but the proper contextual alingment determines and increases performance (e.g. Eisenhardt and Martin, 2000; Wilden et al., 2013). This also supports Gladwin et al.'s (1995) proposition to shift management theory and research to address sustainability challenges and achieve sustainable development. The findings are consistent with Sharma and Vredenburg's (1998) suggestion that proactive environmental strategy has the potential to develop unique competitive capabilities, such as higher order continuous innovation.

Responding to the limited research on sustainability strategies and use of MCS in innovation capabilities in the manufacturing and services sectors (Chatha et al., 2015; Chenhall and Moers, 2015), this study provides evidence from both multinational and local organisations operating in the developing country context (Hart, 1995; Hart and Dowell, 2010; Beddewela and Fairbrass, 2015). The findings deliver an important message for top managers in the services sector, emphasising the need to revisit their current sustainability integration practices into strategic decisions. Moreover, while there are an abundance of opportunities to capture potential markets in the developing country context by focusing on sustainability innovation capabilities, to fully realise such benefits, organisations should pay attention to supportive implementation mechanisms, such as sustainability control systems and "must develop approaches to sustainability that are suited to their local contexts" (Searcy, 2012, p. 250). The

findings also suggest that organisations operating in developing economies benefit from the practices of the NRBV of the firm propositions (Hart and Dowell, 2010; Prahalad and Hart, 2002). This suggestion is supported by Torugsa et al. (2013) who argues that organisational ability formulates and implements proactive sustainability innovation capabilities that lead to better performance, regardless of an organisation's lack of resources.

This study also provides guidance for managers to address increasing sustainability challenges by implementing sustainability innovation capabilities. Top management needs to pay special attention to enabling sustainability control systems that support sustainability innovation capabilities as failure in sustainability management in accordance with organisational goals often occurs due to the lack of established management processes and controls (Masanet-Llodra, 2006; Bebbington and Larrinaga, 2014, Epstein and Buhovac, 2014; Sharma, 2014). More specifically, as suggested by Hart and Dolwell (2010), managers in both multinational and local organisations operating in the developing country need to understand the importance, and future potential, of investing in sustainability innovations with a long-term proactive approach. Managers need to be aware that just developing sustainability innovation capabilities will not generate competitive advantage – successful implementation requires continuous attention and support. On the other hand, more emphasis on controlling use of sustainability control systems to manage sustainability innovation capabilities is more likely to generate negative consequences.

While the study provides new insights to support the use of sustainability control systems in sustainability innovation capabilities, the following limitations provide avenues for further research. First, this study collected cross-sectional data only from a single respondent from each corporation. While the study took a number of steps to address causality problems, typically studies of this nature cannot prove causality and cannot completely rule out reverse causality. The Hausman test indicates that endogeneity is not a major concern in this study, and the results do not seem to be biased by the endogeneity problem. Nevertheless, endogeneity assessment does not guarantee the absence of reverse causality. Future studies in this context may use panel data, design longitudinal studies, or employ natural experiment solutions to address endogeneity.

Second, the intensity of the use of sustainability innovation capabilities and sustainability control systems may also vary in different industries. Managers' understanding and perceptions, and the usefulness of sustainability control systems, may vary depending on the industry and

organisationally specific contextual factors. For instance, some managers may be more inclined to environmental aspects of sustainability while others may be more concerned about social aspects. This should be taken into account when interpreting results as measurement items used in the study may capture the term sustainability in different forms. Future studies may investigate sustainability capabilities and sustainability control systems in a specify industry (e.g. healthcare, apparel, banking and finance, tourism) and/or by focusing on a specific group of managers (e.g. top level, middle level, operational level). Third, while this study only examines enabling and controlling uses of levers of control in terms of formal controls, future studies may focus on the role of informal control systems (e.g. organisational culture) in the formulation and implementation of other sustainability dynamic capabilities, such as learning, relational, informational, marketing, and promotional capabilities. Further, although the sample size is sufficient to run a PLS-SEM model and other statistical analyses, it might not be sufficient to represent all types of services and manufacturing industries. While this study does not compare the use of sustainability control systems between multinational and local organisations, the selected sample minimises generalisability issues to a certain extent. Future studies may also extend this proposition by comparing multinational and local organisations in the developing country context.

Despite these limitations, by investigating the use of sustainability control systems in sustainability innovation capabilities, this study provides novel insights into the literature and practice. First, as most prior studies have focused on the role of MCS in product innovation, the study addresses the use of sustainability control systems in sustainability innovation capabilities. In doing so, this study contributes to the literature relating to the role of MCS in sustainable development. Second, the study integrates all four levers of control as suggested by Simons (1995). This is particularly important to provide a comprehensive view of the use of MCS in innovation capabilities as most of the prior studies have largely focused on interactive and/or diagnostic levers. Third, responding to Chenhall and Moers (2015), this study also provides evidence to support the use of MCS in innovation capabilities in the services sector industries. Fourth and finally, the study guides managers to understand the importance of the enabling use of sustainability control systems to foster dynamic capabilities leading to competitive advantage.

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Chapter 7 : CONCLUSION

7.1 INTRODUCTION

Organisations operating in the contemporary business world are confronted with increasing sustainability pressures from both internal and external stakeholders to control and improve the impact of their operations on society (Bansal and Roth, 2000; Sharrm and Henriques, 2005; Perego and Hartmann, 2009; Phan and Baird, 2015). The way in which organisations should respond to these sustainability determinants has become an important factor not only in social legitimacy, but also long term corporate performance. In response to both institutional and resource-based view (RBV) sustainability determinants, organisations with a proactive sustainability approach tend to adopt systematic sustainability strategies with the aim of effectively managing the sustainability impacts of their products, processes, and services (e.g. Adams and Larrinaga-Gonzalez, 2007; Perego and Hartmann, 2009). Nevertheless, research indicates that these organisations face various difficulties in their proactive strategic responses to sustainability determinants due to lack of established internal control mechanisms, and top management's inability to use existing mechanisms to support sustainability strategic decision making (e.g. Aragón-Correa and Rubio-Lopez, 2007; Bebbington and Larrinaga, 2014; Epstein and Buhovac, 2014).

A growing body of literature suggests that management control systems (MCS) have an important role in supporting sustainability decision making and addressing sustainability impacts. In turn, sustainability control systems have been developed as a specific application of MCS and a part of environmental management accounting (EMA) in addressing emerging environmental, social and economic sustainability challenges (Gond et al., 2015; Ditillo and Lisi, 2016). While a rich body of literature provides evidence to support the design characteristics of MCS, and the use of MCS in the implementation of organisational strategies, the current literature provides less evidence on the use of sustainability control systems in proactive strategic responses to both institutional and RBV sustainability determinants. The absence of well-designed MCS in proactive strategic responses to sustainability determinants may lead to ad hoc responses that have the potential to tarnish organisational reputation and social legitimacy, with consequent negative performance implications (CIMA, 2010).Therefore, this thesis was motivated to contribute to (i) the role of management accounting in the societal relevance of decision making, (ii) the limited literature investigating the use of sustainability control systems in proactive strategic responses to sustainability determinants and sustainability performance implications, (iii) the limited theoretical

applications on the use of sustainability control systems in proactive strategic responses to sustainability determinants, and (iv) the literature investigating the use of sustainability control systems in the developing country context.

The primary aim of this thesis is to understand the use of sustainability control systems in proactive strategic responses to sustainability determinants. To achieve this aim the research underpinning this thesis examines the use of sustainability control systems in (i) strategically responding to institutional pressures for sustainability, (ii) translating proactive sustainability strategies into corporate sustainability performance, and (iii) implementing sustainability dynamic capabilities as a means of achieving sustainable competitive advantage. The thesis uses a case study and two survey-based studies to empirically examine the above research aims in the developing country context (e.g. Sri Lanka). The remainder of this chapter is structured as follows: Section 7.2 summarises the key findings of the three empirical studies; section 7.3 discusses the theoretical contributions, section 7.4 presents managerial implications; and section 7.5 notes the limitations of the study followed by suggestions for future research.

7.2 SUMMARY OF FINDINGS

The study has several interesting and unexpected findings on the use of sustainability control systems in proactive strategic responses to sustainability determinants. A case study (paper one) was designed to explore whether and how organisations use sustainability control systems in proactive strategic responses to institutional pressures for sustainability. More particularly, it examined: (i) What forms of institutional pressures (i.e., coercive, mimetic and normative) can influence an organisation to adopt sustainability? (ii) How did the organisation respond (i.e., acquiescence, compromise, avoidance, defiance, and manipulation) to institutional pressures for sustainability? (iii) What was the role of sustainability control systems in supporting strategic responses to institutional pressures for sustainability? The case study was conducted by interviewing sustainability managers in a large-scale multinational apparel manufacturing organisation with its headquarters in Sri Lanka. The study is based on institutional theory (DiMaggio and Powell, 1983), the strategic responses to institutional pressures framework (Oliver, 1991), and the MCS literatures. It reveals that the case organisation is influenced by different institutional pressures for sustainability in terms of coercive pressures (regulatory, transnational organisations, customers, Board of Directors), mimetic pressures (competitors, multinational organisations, group level best practices, sustainability forums and industry experts), and normative pressures (top management philosophy, organisational policies, professional bodies). In response to these institutional pressures for sustainability, interestingly,

the case study finds evidence to support the use of all strategic responses: acquiescence, compromise, avoidance, defiance, and manipulation. In turn, the findings reveal that sustainability control systems play an important role in terms of (i) specifying and communicating sustainability objectives through sustainability policies, sustainability planning, internal sustainability operational structures and procedures, (ii) monitoring sustainability performance through sustainability control systems tools, such as sustainability data collection, sustainability investment appraisals, sustainability budgeting and life-cycle assessments, and (iii) motivating the achievement of sustainability objectives by linking reward systems to achievements through sustainability performance measurement systems.

After exploring how organisations use sustainability control systems in proactive strategic responses to institutional pressures for sustainability, a survey-based approach was employed to determine the extent to which organisations use sustainability control systems in proactive strategic responses to RBV sustainability determinants. These two survey-based studies examine the use of sustainability control systems in (i) translating proactive sustainability strategies into corporate sustainability performance, and (ii) implementing sustainability innovation capabilities as a means of achieving sustainable competitive advantage. Partial Least Squares Structural Equation Modeling is used to analyse the survey data collected from top managers in 175 manufacturing and services sectors representing both multinational and local organisations operating in Sri Lanka. Theoretically, these two studies are based on the natural-resource-based view (NRBV) of the firm (Hart, 1995), dynamic capabilities (Teece et al., 1997), and the levers of control framework (Simons, 1995).

The first survey-based study (paper two) looks at the mediating impact of sustainability control systems on the relationship between proactive sustainability strategies and corporate sustainability performance. The results reveal that sustainability control systems only show a partial mediating impact on the relationship between proactive sustainability strategies and corporate sustainability performance. The mediating effect of sustainability control systems is examined under three sustainability strategies, where environmental and social strategies reveal a partial mediation, and economic strategy shows no mediation. The study also finds that (i) proactive sustainability strategies is positively associated with sustainability control systems and corporate sustainability performance, and (ii) sustainability control systems are positively associated with corporate sustainability performance. These findings are consistent in all three sustainability models: environmental, social and economics.

The second survey-based study (paper three) examines the moderating impact of enabling and controlling uses of sustainability control systems on the relationship between sustainability innovation capabilities and sustainable competitive advantage. The results demonstrate that while the enabling use of sustainability control systems shows a positive moderating impact on the relationship, on the other hand, the controlling use of sustainability control systems shows a negative moderating impact. The study also compares the results between manufacturing and services organisations. Contrary to expectation, the industry analysis reveals no moderating impacts of both enabling and controlling uses of sustainability control systems in the services industry. Further analyses indicate that sustainability innovation capabilities are significantly associated with sustainability competitive advantage; however, the relationship is insignificant in the services sector.

Overall, as proposed in the thesis, the empirical findings suggest that the use of sustainability control systems has an important role in proactive strategic responses to both institutional and RBV sustainability determinants. The findings also suggest the organisational ability to use sustainability control systems in proactive strategic responses to sustainability determinants has the potential to gain corporate sustainability performance and, in turn, sustainable competitive advantage. Thus, the results conclude that instead of merely complying with sustainability determinants or implementing sustainability projects on an ad hoc basis, organisations should take a more proactive approach in responding to sustainability determinants with the support of the appropriate use of sustainability control systems.

7.3 CONTRIBUTION TO THE LITERATURE

The primary argument of research underpinning this thesis is that the organisational ability to use sustainability control systems supports proactive strategic responses to institutional and RBV sustainability determinants. As discussed in the below subsections, the research conducted in this thesis makes an original and substantial contribution to MCS, sustainability management, and strategic management literature concluding that sustainability control systems have an important role in proactive strategic responses to institutional and RBV sustainability determinants.

Use of sustainability control systems in proactive strategic responses to institutional pressures for sustainability

As shown in paper one, examining whether and how organisations use sustainability control systems in proactive strategic responses to institutional pressures for sustainability provides novel insights to the management accounting literature. More specifically, Lounsbury (2008) emphasises that while MCS have an important role in strategic responses to institutional pressures, the current literature does not provide sufficient evidence to support the use of MCS in organisational change. By incorporating institutional theory and strategic responses to the institutional pressures framework, this study supports Lounsbury's (2008) call for studies into how accounting systems shape intra-organisational dynamics, more particularly in responding to institutional pressures for sustainability. The study shows explicit evidence (see Table 4.2) on how the case organisation uses different sustainability control systems in each proactive strategic responses to separate institutional pressures for sustainability. As depicted in Table 4.2, the findings reveal that not all sustainability control systems are equally important in responding to all proactive strategic responses, but the relevance and importance of using sustainability control systems vary depending on the nature of proactive strategic responses and respective institutional pressures for sustainability. These empirical findings support Lounsbury's (2008, p. 358) suggestion to "look for systematic variation in management control practices and to link such variation to broader control logics". More precisely, as discussed above, the case study shows how the use of sustainability control systems in strategic responses to institutional pressures for sustainability vary with the chosen strategy, and respective institutional pressures for sustainability. Organisations should understand the relevance and importance of choosing appropriate sustainability control systems in proactive strategic responses to specific institutional pressures for sustainability to support effective sustainability decision making and, in turn, to achieve organisational development.

The findings also contribute to Ball and Craig's (2010) suggestion that it is necessary to combine different institutional theoretical insights to understand the role of accounting in addressing sustainability concerns. Consistent with Larrinaga-Gonzalez and Bebbington's (2001) argument, this thesis provides evidence to support that sustainability control systems enable organisational changes in responding to environmental agenda. This thesis's core argument that sustainability control systems have potential in proactive strategic responses to sustainability determinants supports Bromley and Powell's (2012, p. 519) view that managers should "focus thoughtfully on shaping tools, such as systems of reporting, monitoring, and evaluation, in ways that are more directly linked to their organisation's core activities". Responding to Bromley and Powell (2012), this thesis provides guidance for managers not only on how to respond to external environmental pressures, but also to internal sustainability

determinants. This is also in line with Scapens' (2006) suggestion that institutional theories can support an understanding of the practical complexities of interrelated influences that impact individual organisations.

While institutional theory has been one of the leading theories to explain organisational adoption and changes of management accounting practices, prior studies examining the role of MCS in sustainability from the institutional perspective have largely focused on the institutional and stakeholder influences on the design of MCS (e.g. Durden, 2008; Ballou et al., 2012; Pondeville et al., 2013; Rodrigue et al., 2013; Phan and Baird, 2015), thereby, leaving a gap on the use of sustainability control systems in proactive strategic responses to institutional pressures for sustainability. This is one of the few studies to examine how organisations use sustainability control systems in proactive strategic responses to institutional pressures for sustainability. This thesis contributes to the claim that institutional theory provides contextual lenses to examine proactive strategic responses to sustainability determinants (e.g. Campbell, 2007; Matten and Moon, 2008). For instance, Ball and Craig (2010, p. 283) explain that "neo-institutional theory can increase understanding of an organisation's general response to social and environmental issues and social activism. More particularly, it can frame an organisation's accounting responses". In doing so, as proposed by Lounsbury (2008), the study contributes to the role of MCS literature that shapes intra-organisational dynamics and practical variances and, in turn, its organisational performance implications. Thus, it is reasonable to conclude that sustainability control systems have an important role in supporting proactive strategic responses to institutional pressures for sustainability, and in particular, supporting and understanding organisational practical variances and internal dynamics (cf. Lounsbury, 2008).

Use of sustainability control systems in implementing proactive sustainability strategies and sustainability dynamic capabilities

This thesis contributes to the limited MCS literature that focuses on the implementation of strategy and dynamic capabilities from the RBV perspective (Henri, 2006; Widener, 2006; Grafton et al., 2010). More specifically, referring to the NRBV of the firm, the thesis adds to the literature by investigating the use of sustainability control systems in proactive strategic responses in implementing proactive sustainability strategies and sustainability innovation capabilities. This is important as the extant literature provides less evidence on the use of sustainability control systems in implementing sustainability strategies and sustainability

capabilities (e.g. Gond et al., 2012; Arjaliès and Mundy, 2013; Crutzen and Herzig, 2013; Lueg and Radlach, 2015; Ditillo and Lisi, 2016; Journeault, 2016).

As demonstrated in paper two, the study examines the mediating role of sustainability control systems in translating proactive sustainability strategies into corporate sustainability performance. As shown in Table 5.7, the study provides a comprehensive analysis of all three environmental, social, and economic proactive sustainability strategies, and respective environmental, social and economic sustainability performance. Lueg and Radlach (2015, p. 10) conclude that "we find that research relates very often to environmental MCS, ignoring social responsibility or the economic perspective". More particularly, Lueg and Radlach (2015, p. 1) find that "only few organisations implement a sustainable MCS that addresses all aspects of SD [sustainable development]". This study integrates three principles of sustainability: environmental, social and economic aspects to examine the use of sustainability control systems, whereas most of the prior studies in this context have largely focused on the environmental aspect (e.g. Henri and Journeault, 2010; Lisi, 2015). As specifically shown in the case study, top management commitment is a key driver of implementing sustainability practices; this thesis enhances the understanding of the role of top managers in promoting improved social sustainability practices (Sharma, 2000; Norris and O'Dwyer, 2004; O'Dwyer and Unerman, 2016). This supports the view that "a company's social responsibilities are not met by some abstract organisational actor; they are met by individual human actors who constantly make decisions and choices, some big and some small, some minor and other of great consequence" (Wood, 1991, p. 699).

As revealed in paper three, this thesis empirically assesses the use of sustainability control systems in managing sustainability innovation capabilities. While most previous MCS studies provide evidence to support product and process innovation (Bisbe and Otley, 2004; Ferreira et al., 2010), sustainability innovation capabilities have been given little attention (Lopez-Valeiras et al., 2015a, 2015b; Journeault, 2016). Providing some novel insights on the interlinkages amongst institutional and RBV sustainability determinants, respective strategic responses, and sustainability control systems that support proactive strategic responses, this study responds to calls for studies of MCS to contribute literature from the perspective of the RBV of the firm (Nixon and Burns, 2012) and dynamic capabilities perspective as comparative studies in different industries in the Asian context (Omar et al., 2015).

This thesis also supports the literature that indicates the importance of examining the use of MCS in the strategic change process (cf. Lord, 1996; Chenhall, 2003; Kober et al., 2007). This is consistent with Kober et al.'s (2007) suggestion that MCS have the capacity to support strategic changes in a proactive way through interactions within the organisation and its environment. Moreover, as Kober et al. (2003) conclude, MCS have been changing in order to meet the changes in the strategy typology, which is in line with the findings in this study that contribute to the emerging role of sustainability control systems in proactive strategic responses to sustainability determinants. Moreover, the findings show that the strategic alignment between sustainability control systems and sustainability strategies leads to improved performance.

This thesis supports Simons' (1995) core argument that the organisational ability to use levers of control together creates a positive impact on performance (as shown in paper two), and different uses of enabling and controlling uses of levers of control create positive and negative impacts (as shown in paper three), respectively. In particular, paper three shows that while enabling use of levers of control (belief–interactive) creates a positive moderating impact on sustainability innovations capabilities and sustainable competitive advantage, more emphasis on controlling use of levers of control (boundary–diagnostic) negatively moderates the relationship (e.g. Mundy, 2010). The findings support the view that the different uses of MCS facilitate different purposes of strategy implementation (Lord, 1996; Naranjo-Gil and Hartmann, 2006). Moreover, employing a survey-based approach to operationalising levers of control in the sustainability context is important because many prior studies using the levers of control framework have contributed to qualitative or conceptual approaches (Gond et al., 2012; Arjaliès and Mundy, 2013; Rodrigue et al., 2013; Rieckhof et al., 2015).

Use of sustainability control systems from a holistic perspective to support sustainable development efforts

The study advances EMA literature by operationalising sustainability control systems from a holistic approach. First, the thesis uses a case study approach to understand whether and how organisations use sustainability control systems in proactive strategic responses to institutional pressures for sustainability in terms of in specifying and communicating objectives, monitoring performance, and performance measurement (cf. Otley and Berry, 1980; Emmanuel et al., 1985; Lindsay et al., 1996). Second, using a survey-based approach, the study determines the extent

to which organisations use sustainability control systems in translating proactive sustainability strategies into sustainability performance. In particular, the two survey-based studies investigate levers of control together (paper two) and enabling (belief–interactive) and controlling (boundary–diagnostic) uses of sustainability control systems (paper three) as a second-order hierarchical construct, representing four levers of control (Simons, 1995). In doing so, this thesis contributes to EMA literature by examining control systems from a holistic perspective instead of examining specific individual control techniques, such as environmental performance measurement systems. Chenhall (2003) warns that studying individual aspects of control systems isolated from other organisations controls is more likely to result in model under-specification.

The study demonstrates the importance of sustainability control systems in proactive strategic responses to sustainability determinants by empirically operationalising sustainability control systems in addressing all types of sustainability challenges (Ball and Milne, 2005). While the traditional emphasis of the role of accounting is in financial decision making and accountability, researchers argue there is a need for emerging forms of accounting to incorporate the requirements of sustainable development (Unerman et al., 2007; Perego and Hartmann, 2009; Unerman and Chapman, 2014; O'Dwyer and Unerman, 2016). This thesis attempts to enhance the understanding of how sustainable development efforts can be realised through managerial accounting systems. In light of this, the thesis also responds to recent calls for studies for MCS to contribute to sustainable development (e.g. Perego and Hartmann, 2009; Schaltegger and Burritt, 2010; Gond et al., 2012; Merchant, 2012; Arjaliès and Mundy, 2013; Crutzen and Herzig, 2013; Bebbington and Thomson, 2013; Schaltegger et al., 2013; Ditillo and Lisi, 2016). Moreover, the thesis emphasises the importance of MCS research in supporting the societal relevance for decision making, with a particular focus on the proactive strategic responses to institutional and RBV sustainability determinants (e.g. Scapens, 2006; Modell, 2014).

Incorporating sustainability determinants and strategic responses to sustainability determinants

This thesis examines both institutional and RBV determinants of sustainability together with respective strategic responses, the use of sustainability control systems, and performance implications of an integrated approach. This integrative approach provides novel insights to better understand the broader perspectives of addressing sustainability challenges. Importantly,

most prior studies have focused on single aspects, either RBV (e.g. Russo and Fouts, 1997; Klassen and Whybakr, 1999; Torugsa et al., 2013) or an institutional perspective (e.g. Jennings and Zandbergen, 1995; Hoffman and Ventresca, 2002), with the exception of Bansal (2005) where both the institutional and RBV perspectives are examined together. This study contributes to the literature, suggesting that proactive strategic responses to sustainability determinants requires an integrated approach of institutional and RBV perspectives rather than relying on a single theoretical perspective.

This means that merely focusing on single aspects is less likely to support long-term corporate sustainability efforts. Instead, an integrated approach is necessary as each and every business activity is somehow connected to sustainability determinants. By integrating the strategic responses to institutional pressures framework (Oliver, 1991), and the NRBV of the firm (Hart, 1995), this thesis extends Oliver's (1997) view that achieving sustainable competitive advantage requires an integration of both institutional and RBV perspectives. More specifically, this supports Oliver's (1997, p. 697) argument that "a firm's sustainable advantage depends on its ability to manage the institutionalised context of its resource decisions". Bansal (2005) emphasises that both institutional and RBV perspectives are necessary to understand corporate sustainable development. As suggested by Barney et al. (2011), this thesis contributes to new developments in resource-based theory by providing empirical evidence on the proactive sustainability strategies and sustainability dynamic capabilities from the NRBV of the firm perspective.

Proactive strategic responses to institutional pressures for sustainability

While prior researchers have contributed to the institutional theory by examining organisational responsiveness towards the sustainability determinants conceptually (e.g. Jennings and Zandbergen, 1995; Delmas and Toffel, 2004), and empirically (Bansal and Roth, 2000; Bansal, 2005; Sharma and Henriques, 2005; Delmas and Toffel, 2008), less focus has been given to understand whether and how organisations use different strategies to different institutional pressures for sustainability (e.g. Iarossi et al., 2013; Beddewela and Fairbrass, 2015). As summarised in Table 4.2, this thesis contributes to the literature by providing explicit evidence on how organisations use different proactive strategic responses, ranging from acquiescence to manipulation, in response to coercive, normative, and mimetic institutional pressures for sustainability.

In particular, empirical evidence to support the use of avoidance and defiance strategies in responding to institutional pressures for sustainability provides novel insights to the sustainability management literature. For instance, Iarossi et al. (2013) hypothesised that organisations with an expressed commitment to sustainability may respond to institutional pressures with acquiescence, compromise, and manipulation strategies, but cannot be expected to respond using avoidance and defiance strategies. Contrary to Iarossi et al. (2013), this study provides evidence to support that the case organisation investigated in this thesis uses avoidance and defiance strategies. These strategic responses were revealed when the case organisation was confronted with institutional pressures for sustainability that are out of organisational capacity and scope. Yet such responses do not indicate that the organisation is deviating from the expressed commitment to sustainability. In many situations the avoidance responses helped to enhance the sustainability practices at the case organisation. Outcomes in this thesis, also consistent with prior studies, suggest that organisations that engage in sustainability for legitimacy or compliance purposes would change their organisational practices for various reasons, such as complying with external standards or in responding to demands from stakeholders (e.g. Adams and McNicholas, 2007; Arjaliès and Mundy, 2013). Thus, findings in this study also contribute to recent institutional propositions that organisations are not passive actors but respond to institutional pressures for sustainability by different means (Oliver, 1991; Scott, 2001; Lounsbury, 2008). These implications outline interesting insights in an organisation that operates in a customer driven and sustainability sensitive business with less autonomy and under immense pressures from regulators and the community.

Use of sustainability control systems in the developing country context

The thesis supports Peng et al.'s (2008, p. 921) argument that "… research with a focus on emerging economies helps to lead to the emergence of an institution-based view of strategy, in parallel with the traditional industry – and resource-based views". This reveals that understanding strategic implications in the developing country context requires the integration of both institutional and RBV of the firm perspectives, rather than merely relying on one particular approach (Peng et al., 2008). More specifically, the literature recognises these two theoretical perspectives as insightful theories for the examination of emerging economies (Hoskisson et al., 2000; Peng et al., 2008). This study contributes to the sustainability and strategic management literature suggesting that organisational ability to proactively respond to both institutional and RBV sustainability determinants has the potential to gain improved performance in the developing country context. However, this is somewhat contradictory to the

strand of literature arguing that organisations operating in developing country are passive actors and tend to merely comply with institutional pressures. Accordingly, this thesis moves EMA and sustainability management research a step further by referring to both the strategic responses framework and NRBV of the firm perspectives to understand the use of sustainability control systems in proactive strategic responses to sustainability determinants in the developing country context.

Due to a limited number of empirical studies, comparing findings and implications in this thesis with previous MCS studies in this strand of literature in the Sri Lankan context is somewhat limited. Yet, the findings are consistent with those of Gunarathne and Lee (2015) that organisations in the hotel industry in Sri Lanka have integrated some EMA practices into daily operations with the aim of saving costs and achieving strategic benefits. The results in this thesis are also supported by a recent study by Munasinghe et al. (2016) that a life-cycle analysis of the carbon and energy footprint of the garment industry in Sri Lanka supports sustainable development efforts. Analysing an example from a bra manufacturer, their study clearly shows how a well-designed sustainability control systems tool, such as life-cycle analysis, could be used in sustainability strategic decision making in the developing country context (Munasinghe et al., 2016). This thesis also finds both similar and contrasting findings to the previous sustainability-related studies (mostly in sustainability reporting and corporate social responsibility disclosure) undertaken in the Sri Lankan context. Thoradeniya et al. (2015) report that managers' perceptions of sustainability reporting is as important as their perceptions of stakeholder pressures for sustainability, organisational resource availability, and constraints, which is quite similar to the findings in this thesis. However, exploring corporate social responsibility reporting by multinational enterprises operating in Sri Lanka, Beddewela and Herzig (2013) state that "unless heroic and unrealistic assumptions about voluntary approaches such as international standards and award schemes requiring high demands are made, the effectiveness of normative isomorphism mechanisms remains restrained". This conclusion is quite contradictory to the findings in this thesis that organisations take more proactive approaches to sustainability, motivated by both long-term corporate sustainability performance and external social legitimacy. However, the findings of this study are consistent with Perry et al.'s (2015) conclusion that even factory level managers in Sri Lanka conceptualise corporate social responsibility in strategic terms, and those of Beddewela and Fairbrass (2015) that corporate social responsibility practices are important tools to strategically respond to institutional pressures for sustainability and gain legitimacy.

7.4 PRACTICAL IMPLICATIONS

Implications for top management and management accounting practitioners

Managers in the contemporary business world face unprecedented challenges that require application of new accounting tools to plan, monitor, and evaluate performance in a wide range of activities within and outside the organisation. A well-designed MCS should support top management in quality and effective decision making and, in turn, in achieving organisational goals. The debate over the practical relevance and usefulness of management accounting research and theoretical applications has increased over the years (Merchant and Otley, 2007; Chapman and Kern, 2012; Merchant, 2012; Scapens, 2012; Modell, 2014; Tucker and Schaltegger, 2016). The way in which organisations respond to sustainability determinants has been an important factor that influences corporate survival and long-term success. Lack of established internal managerial processes on how to proactively respond to sustainability challenges has been a major impediment for top management in implementing sustainability strategies. This thesis suggests that the organisational ability to use sustainability control systems has important implications for practising managers to understand proactive strategic responses to institutional and RBV sustainability determinants. Further, the examination of the use of sustainability control systems in proactive strategic responses to sustainability determinants contributes to practitioners' demands for MCS that are capable of addressing sustainability challenges (CIMA, 2010). The operationalisation of sustainability control systems would help them to better understand the importance of systematically integrating sustainability aspects into MCS.

This study also provides useful insights to practitioners on how to proactively respond to both institutional and RBV sustainability determinants. Conceptual arguments and empirical evidence proposed in this study can assist managers to better understand the use of sustainability control systems in proactive strategic responses to sustainability determinants, instead of reactively complying with sustainability regulations, or responding on an ad hoc basis. Moreover, the results provide an encouraging message for organisations that have not attempted, or only in part, to integrate sustainability into organisational strategy. The findings are also helpful for managers to consider specific sustainability issues to be integrated into the strategic decision making process, and the respective managerial controls to be followed in implementation. Additionally, organisations that have integrated sustainability into strategic decision making to a certain extent would also benefit in improving their sustainability efforts.

The empirical evidence supports the view that the integration of sustainability into organisational strategies has the potential to improve long-term corporate performance. However, managers should take into account that just integrating sustainability into strategy would not lead to improved performance, but should be supported by well-designed sustainability control systems to effectively implement sustainability strategies. Therefore, the adoption and integration of sustainability control systems into the decision making process is important to achieve sustainability goals through proactive strategic responses. Top management also needs to provide adequate financial and other resources to middle and lower level managers who are responsible for the operationalisation of sustainability projects and practices. In particular, it is important to grant the authority in clear written statements so that responsible employees would motivate and empower engagement in sustainability activities. In particular, respondents stressed that management accountants' understanding of sustainability issues and involvement with sustainability teams are critical in many aspects in achieving sustainability goals. Managers should also be aware of the limitations of the use of MCS in strategic responses, such as top management commitment and willingness to strategically responding to sustainability pressures, measurability and ability to collect sustainability information, usefulness of MCS information, the nature of institutional pressures (e.g. regulatory) and the public image of the organisation as well.

Implications for Western retailers and multinational organisations

The study provides useful insights for Western retailers, multinational enterprises and investors whose manufacturing facilities are located in developing country on (i) how manufacturing and services organisations react to external and internal sustainability determinants, (ii) the extent to which organisations integrate sustainability aspects into organisational strategies, and (iii) how and whether these organisations employ formal internal control mechanisms to systematically implement sustainability practices. Such information would assist foreign investors to assess their future investment decisions in the developing country context. The study also conveys an important message for Western investors that suppliers committed to sustainability in Asia tend to strategically respond to sustainability determinants as a means of strengthening outsourcing contracts, instead of mere compliance. The results of the study also reveal useful insights to larger retailers whose manufacturing facilities are located in emerging countries on how manufacturers understand and react to the sustainability demands of retailers, how organisations internally drive sustainability practices, and how do manufacturers comply with sustainability demands in different contextual settings. It should be noted that institutional

pressures for sustainability are rapidly increasing, and organisational failure to address such concerns by strengthening sustainability innovations may result in long-term negative consequences. In particular, the findings highlight that the extent to which services organisations use sustainability innovation capabilities as a way of strategically responding to sustainability determinants is somewhat weak at present, and requires further top management attention.

Implications for regulatory bodies and policymakers

Regulators and governing bodies in developing nations, particularly in Sri Lanka, may benefit from the outcomes of this study. As discussed in the case study, sustainability managers expressed their concerns over the lack of strong sustainability regulations, and issues related to the practical implementation of some regulations that discourage organisations committed to sustainability. Regulatory and professional bodies, such as the Central Environment Authority, Ceylon Chamber of Commerce, National Chamber of Commerce, and Board of Investments in Sri Lanka should assist sustainability practices by (i) developing national policies that apply to different layers of the corporate sectors (e.g. small and medium enterprises and large-scale organisations), (ii) introducing standardised and comprehensive performance measurement mechanisms to evaluate the sustainability practices (e.g. environmental, social and economic sustainability performance measurements), (iii) encouraging and promoting organisations that have not yet embraced sustainability, and (iv) ensuring the practical implementation of the existing regulations and policies. The researcher also observed the practical relevance in this study during the data collection period. Many interview participants highlighted the importance of the policy implications of regulatory bodies in sustainability management. More particularly, it was revealed that in some instances while business organisations have taken a number of steps to proactively respond to sustainability challenges, the government and regulatory bodies have not sufficiently recognised their efforts. Government and regulatory bodies may take a more collaborative approach with industry partners, and can also educate the general public about the importance of public policies on sustainability matters, such as climate change.

7.5 LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

Common to any study, the research undertaken in this thesis is subject to a number of limitations. These limitations include generalisability issues in the field study findings, potential issues caused by the survey data (e.g. causality), and the quality of measurement items. These limitations, their consequences, and directions for future research are discussed accordingly.

First, while the case study is based on a large-scale single organisation that provides deeper insights on the study proposition, inherently, case studies of this nature limit the generalisability of findings (Yin, 2009). While the study took a number of steps to collect sustainability data from most of the relevant people who are responsible for sustainability management, and observing flagship eco-plants, due to the size of the organisation with more than 40 manufacturing plants, the researcher was not able to visit and report all the sustainability practices implemented by the organisation. While this study provides some novel insights on the use of sustainability control systems in proactive strategic responses to institutional pressures for sustainability, there are fruitful research opportunities to employ longitudinal studies to examine the individual aspects of institutional pressures, individual sustainability control systems tools, and individual strategic responses in order to expose a deeper understanding of the changes in the phenomenon over time. Moreover, future researchers in sustainability management and accounting can also further examine the proposition in this study by referring to other related theoretical concepts, such as institutional logics, actor network theory, or practice theory (e.g. Lounsbury, 2008).

The second limitation in this study is related to the use of cross-sectional data in the second and third research papers, which only investigates the impact of both independent and dependent variables at one given point of time. While quantitative studies of this nature have a number of benefits, such as the relatively large-scale sample increasing the generalisability of findings, the method also involves a number of limitations. For instance, the use of survey methods does not allow the researcher to probe into the responses and there is no control over who responds to the survey. Future studies may employ in-depth case studies to investigate the use of sustainability control systems in proactive strategic responses to sustainability determinants. Further, this study only collected survey data from a single respondent from each organisation, which leads to potential common method bias. Future studies may attempt to collect data from several layers of managers (e.g. top, middle, and lower levels) to minimise the potential for common method bias.

Third, one of the common issues in the survey-based method is the difficulty of assessing the causative relationships (Luft and Shields, 2014). While the study took a number of steps to minimise causality issues in survey-based studies, positivist management accounting research cannot completely rule out subjectivity influences on developing and validating causal explanations (Luft and Shields, 2003, 2014). For instance, Luft and Shields (2014, p. 550)

emphasise that "although positivist accounting research aims at objectivity in the use of these strategies, we argue that subjectivity plays an important role as well". Future accounting researchers can follow the procedures suggested by Luft and Shields (2014) to minimise subjectivity implications. Future studies that incorporate longitudinal data or panel data would also be able to minimise this issue to a certain extent (Echambadi et al., 2006).

Researchers in accounting (e.g. Chenhall and Moers, 2007; Larcker and Rusticus, 2007; Van Lent, 2007; Gippel et al. 2015) have increasingly recognised the necessity of testing for endogeneity as a means of enhancing the validity of theory-based empirical studies. Garcia-Castro et al. (2010) reveal that the inconclusive results between social performance and financial performance are largely influenced by the endogeneity problems. This study examined the potential for endogeneity bias as sustainability is measured in all independent and outcome variables, which might lead to simultaneous causality problems. The Hausman test indicates that endogeneity is not a major concern in both survey-based studies, and results do not seem to be biased by the endogeneity problem. Nevertheless, endogeneity assessment does not guarantee the absence of reverse causality. Van Lent (2007) argues that theory in accounting is unlikely to address the endogeneity problem, and, on the other hand, econometrics solutions only partially address it. As suggested by Gippel et al. (2015), future studies in this context would use panel data or may employ state-of-the-art natural experiment solutions to address endogeneity.

The fourth specific limitation is related to measurement of variables. All the variables examined in this study refer to sustainability, including sustainability control systems, corporate sustainability determinants, sustainability strategic responses, and sustainability outcomes. The term sustainability is a broader concept that denotes an undefined amount of activities, including environmental, social, and economic aspects. Study participants' understanding, perception, basis of strategic responses, and the usefulness of MCS in sustainability management may vary depending on industry and country specific contextual factors. This fact should be taken into account when interpreting results as there is a potential for measurement overlapping and errors. For instance, some managers may be more inclined towards the environmental aspect of sustainability while others may be more concerned about the social aspects. While the study invested considerable effort and time to develop measurements, there is room for further improvement. Measurement items were developed referring to an extensive review of the literature, conducting pilot studies, and complying with Human Research Ethics Guidelines. However, some variables used to measure corporate sustainability performance and

sustainability control systems may not capture the comprehensive view of sustainability performance and managerial controls. Future studies may consider other sustainability indicators that are not investigated in this study.

Fifth, although the sample size in this study is sufficient to run a PLS-SEM model and other statistical analyses, it might not be sufficient to represent all types of services and manufacturing industries, and to generalise the management accounting applications in the literature (Van der Stede et al., 2005, 2007). While the findings in this study are also supported by a case study, caution should be taken in interpreting the results.

Sixth, future researchers can also empirically assess the potential role of sustainability control systems in proactive strategic responses to sustainability determinants from different perspectives. For instance, there is a need to examine the role of informal control systems in proactive strategic responses to sustainability determinants. As each organisation approaches sustainability according to its unique context, not only formal MCS (i.e., rules, standard operating procedures and/or budgeting systems), but informal control practices, such as organisational culture might play a vital role in supporting organisational response to institutional pressures for sustainability. Prior studies also reveal that organisations with a strong sustainability culture can motivate employees' behaviour towards sustainability practices and ensure their engagement and support to accomplish sustainability goals (Pondeville et al., 2013; Epstein and Buhovac, 2014). From a proactive strategic responses perspective, it is suggested that future studies may examine the role of informal sustainability control systems in other sustainability dynamic capabilities, such as learning, informational and relational capabilities.

Finally, while this study provides evidence from both multinational–local, and manufacturing–services industries, the findings should be interpreted by taking into account the developing country context, in particular cultural and economic conditions in Sri Lanka. The World Bank (2016) forecasts that the emerging economies no longer drive global growth due to weak capital inflows and weak trade and commodity prices. Future studies may also examine any differences in the use of sustainability control systems in proactive strategic responses to sustainability determinants between local and multinational organisations operating in the developing country as well as in developed countries.

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APPENDIX A: COUNTRY PROFILE

Sri Lanka (until 1972 known as Ceylon) is a tropical island located in South Asia, with a land area of 65,610 square kilometres. Sri Lanka's current administrative capital is Sri Jayawardenapura Kotte and the commercial capital is Colombo. Sri Lanka's history goes back to the 5th Century BC when Indo-Aryan migrants settled in the island. After the 16th century, both the Portuguese and the Dutch ruled Sri Lanka. Sri Lanka was a British colony for almost 150 years from 1833 before gaining independence in 1948. Since independence Sri Lanka has been a Sovereign Republic until 1972, and a Democratic Socialist Republic in 1978. A civil war between the Liberation Tigers of Tamil Eelam (LTTE) and the Sri Lankan government lasted from 1980 until the LTTE was defeated in 2009.

Sri Lanka is a developing country. As per the Central Bank of Sri Lanka (2015), key economic indicators of the Sri Lankan economy include: GDP (at Market Prices) 67.2 USD Bn. (2013); per capita GDP 3265USD (2013); GDP growth 7.2% (2013); and unemployment 4.4% (2013). The sector wise contribution to GDP includes: services 57.6%, industry 32.2%, and agriculture 10.1%. Sri Lanka's major export earning comes from textiles and garments that account for around 4.5USD Bn. by 2013. Sri Lanka's economy was negatively affected by the civil war, with a loss of over 80,000 lives, and large-scale natural disasters, such as the tsunami in 2004, which killed more than 30,000 people.

Sri Lanka is a multicultural country. By 2012, representation of different ethnic groups includes Sinhalese 74.9%, Sri Lankan Tamil 11.2%, Indian Tamil 4.1% and Sri Lankan Moor 9.3% (The Central Bank of Sri Lanka, 2015). While Sri Lanka has two official national languages, Sinhalese and Tamil, English is widely used in trade and commerce. As per the census of population and housing statistics in 2012, the population by religion is Buddhist 70.1%, Hindu 12.6%, Islam 9.7% and Christian 7.6%. The highest percentage of population lives in rural areas, accounting for 77.4%. The urban and estate population is 18.2% and 4.4%, respectively. While Sri Lanka's mid-year population in 2014 is 20.77 Mn, the population growth rate is 0.9%. Compared to other developing country in Asia and most of the world, Sri Lanka has been maintaining relatively high socio-economic indicators, such as Human Development Index – 0.757 (2015), average life expectancy 74.9 years (2015), higher levels of education (e.g. adult literacy rate 91%, expected years of schooling 13.7, mean years of schooling 10.8 in 2015), and average literacy rate 92.5% (2015) (The United Nations Development Programme, 2015). In 2015, the United Nations

Development Programme classified Sri Lanka as a 'High Human Development' country. Sri Lanka holds memberships of many regional and international organisations, such as the Commonwealth of Nations, United Nations, The World Bank, International Monetary Fund, International Labour Organisation, Asian Development Bank, and South Asian Associated for Regional Cooperation, to name a few.

APPENDIX B: ETHICS APPROVAL - THE CASE STUDY

Dear Mr Munir,

Re: 'Sustainability embedded management control systems: Strategic responses to institutional pressures for sustainability.'

Reference No.: 5201300659

Thank you for your recent correspondence. Your response has addressed the issues raised by the Faculty of Business & Economics Human Research Ethics Sub Committee. Approval of the above application is granted, effective "14/10/2013". This email constitutes ethical approval only.

This research meets the requirements of the National Statement on Ethical Conduct in Human Research (2007). The National Statement is available at the following web site:

 http://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/e72.pdf.

The following personnel are authorised to conduct this research:

Dr Ranjith Appuhami
Mr Rahat Munir
Mr Ubhayasiri Chaminda Bandara Wijethilake

NB. STUDENTS: IT IS YOUR RESPONSIBILITY TO KEEP A COPY OF THIS APPROVAL EMAIL TO SUBMIT WITH YOUR THESIS.
Please note the following standard requirements of approval:

1.   The approval of this project is conditional upon your continuing compliance with the National Statement on Ethical Conduct in Human Research (2007).

2.   Approval will be for a period of five (5) years subject to the provision of annual reports.

Progress Report 1 Due: 14th Oct. 2014
Progress Report 2 Due: 14th Oct. 2015
Progress Report 3 Due: 14th Oct. 2016
Progress Report 4 Due: 14th Oct. 2017
Final Report Due: 14th Oct. 2018

NB. If you complete the work earlier than you had planned you must submit a Final Report as soon as the work is completed. If the project has been discontinued or not commenced for any reason, you are also required to submit a Final Report for the project.

Progress reports and Final Reports are available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

3.   If the project has run for more than five (5) years you cannot renew approval for the project. You will need to complete and submit a Final Report and submit a new application for the project. (The five year limit on renewal of approvals allows the Committee to fully re-review research in an environment where legislation, guidelines and requirements are continually changing, for example, new child protection and privacy laws).

4.   All amendments to the project must be reviewed and approved by the Committee before implementation. Please complete and submit a Request for Amendment Form available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

5.   Please notify the Committee immediately in the event of any adverse effects on participants or of any unforeseen events that affect the continued ethical acceptability of the project.

6.   At all times you are responsible for the ethical conduct of your research in accordance with the guidelines established by the University. This information is available at the following websites:

http://www.mq.edu.au/policy/
http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/policy

If you will be applying for or have applied for internal or external funding for the above project it is your responsibility to provide the Macquarie University's Research Grants Management Assistant with a copy of this email as soon as possible. Internal and External funding agencies will not be informed that you have approval for your project and funds will not be released until the Research Grants Management Assistant has received a copy of this email.

If you need to provide a hard copy letter of approval to an external organisation as evidence that you have approval, please do not hesitate to contact the FBE Ethics Committee Secretariat, via fbe-ethics@mq.edu.au or 9850 4826.

Please retain a copy of this email as this is your official notification of ethics approval.

Yours sincerely,

Parmod Chand
Chair, Faculty of Business and Economics Ethics Sub-Committee
Faculty of Business and Economics
Level 7, E4A Building
Macquarie University
NSW 2109 Australia
T: +61 2 9850 4826
F: +61 2 9850 6140
www.businessandeconomics.mq.edu.au/

APPENDIX C: INTERVIEW INSTRUMENTS[30]

Existing sustainability practices:

Question 1: This study identifies the term 'sustainability' as the integration of environmental, social, and economic practices. Could you please briefly describe the current sustainability practices of your company?

Institutional pressures for sustainability:

Coercive pressures:

Question 1: As you know some external organisations expect you to voluntarily implement sustainability practices while others impose such pressures as regulatory conditions and political decisions. Could you please describe the nature of regulatory pressures generated by external organisations that prompted your company to implement sustainability practices?

Question 2: Please explain how transnational organisations (e.g. United Nations Global Compact, ISO) have influenced your organisation to implement sustainability practices?

2a. Does your company have sustainability obligations to these transnational organisations?

2b. If yes, could you please explain some of them?

Question 3: Could you please explain how and by what means the Board of Directors of your company influences you to implement sustainability practices.

Normative pressures:

Question 1: Can you describe to what extent top management philosophy influences the implementation of sustainability practices?

Question 2: Can you explain how industry trade associations and professional bodies influence your company to implement sustainability practices? (For example, pressures from trade associations such as Joint Apparel Association Forum (JAAF), Sri Lanka Apparel Exporters' Association, Apparel Exporters Association 200 GFP, and Sri Lanka Chamber of Garment Exporters)

Question 3: Do you consider employees' understanding of sustainability issues during the recruitment process?

3a. If yes, what aspects do you particularly consider as minimum requirements for a new employee to be selected?

---

[30] Prior to conducting interviews the study undertook a very detailed analysis of internal documents (i.e., UN Global Compact Communication on Progress reports, AMO news archives) of AMO with the aim of identifying the nature of sustainability practices within the company. Some of the questions were designed to validate our internal document findings. Moreover, prior to commencing interviews, respondents were also informed the definition of 'sustainability'.

3b. What processes do you undertake to train employees and enhance their knowledge about sustainability practices?

Mimetic pressures:

Question 1: How do you understand the sustainability practices implemented by leading companies in your industry?

1a. Do you think that leading companies in the industry set sustainability examples which other companies can imitate?

1b. If yes, could you please give me some examples?

Question 2: Can you briefly describe whether your company analyses sustainability best practices of other companies, and what sustainability practices does your company imitate/model from your competitors or industry partners/joint ventures/alliances?

2a. Could you please tell me why you do so?

Probe question:

Could you please briefly discuss other main forces that influence you to implement sustainability practices?

Question 3: In your opinion which factor is the strongest sustainability force amongst the pressures you just mentioned?

Probe Question:
Can you please describe why it is the strongest pressure?

Adoption of sustainability embedded management control systems

Question 1: Can you briefly explain your internal company structures and procedures for managing sustainability practices?

Probe Question:
1a. Do you have explicitly written policies to implement sustainability practices?

1b. Do you directly adopt sustainability policies from your joint ventures?

Question 2: Does your company include sustainability practices into the strategic planning agenda?

Question 3: What sort of sustainability related information does your company collect from different business units?

3a. Could you please explain the objectives and procedures for collecting sustainability information?

Question 4: Does your company set short and long-term sustainability targets?

4a. If yes, do you have specific Key Performance Indicators (KPIs) to measure sustainability performance within your performance measurement systems (PMS)?

4b. If yes, could you please name and briefly describe some of them?

4c. How do you use those KPIs in evaluating employees' and corporate performance?

Question 5: Do you consider environmental, social, and economic aspects in evaluating new projects and investments?

5a If yes, could you please briefly explain the specific criteria that you take into account?

Question 6: Does your company undertake sustainability cost-benefit analysis?

Question 7: Does your company apply life-cycle cost analysis relevant to sustainability implications?

Question 8: Can you explain how and to what extent budgeting supports sustainability practices?

Question 9: Companies use different types of management control systems, such as budgeting, planning, performance evaluation, investment appraisal, pricing, cost-benefit analysis, and reporting. According to your understanding, what are the most important and commonly used management control mechanisms in implementing sustainability practices in your company?

Question 10: Do you think that management control systems of your company play a major role in implementing sustainability practices?

Probe questions:
10a. Have you faced any difficulty in implementing sustainability practices through management control systems?

10b. If yes, what were those difficulties and how have you responded to overcome them?

10c. If no, why it was so?

Strategic responses to institutional pressures:

Question 1: We know that in some situations you have to passively comply with sustainability pressures while in other situations you can actively respond. Can you state some situations where you have no choice other than complying with sustainability demands?

Question 2: Could you please tell me situations where you have opportunities to negotiate with institutions regarding their sustainability demands rather than merely accepting them?

Question 3: Practically we know that every company cannot accommodate all the sustainability demands that external organisations ask for. I would appreciate if you share an

example where you have refused to accept unreasonable sustainability demands that you cannot implement within your capacity or which does not come under your business scope?

Question 4: Does your company have formal or informal alliances with other companies to protest against 'unacceptable' or 'impossible' sustainability requirements?

Question 5: Can you explain how management control systems support you to actively respond to sustainability demands?

Question 6: Have you changed your internal company practices particularly to meet external sustainability demands?

6a. If yes, what internal practices were changed and to what extent were they changed?

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Faculty of Business and Economics
MACQUARIE UNIVERSITY NSW 2109
AUSTRALIA
Phone: +61 (0)2 9850 4765
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Email: rahat.munir@mq.edu.au

Chief Investigator's / Supervisor's Name:

Chief Investigator's / Supervisor's Title:

Participant Information and Consent Form

Name of Project: Sustainability embedded management control systems: Strategic responses to institutional pressures for sustainability

You are invited to participate in a study of *Sustainability embedded management control systems: Strategic responses to institutional pressures for sustainability*. The purpose of the study is to examine the adoption of sustainability embedded management control systems in response to institutional pressures for sustainability. In particular, the study examines (i) whether, how, and why organisations adopt sustainability embedded management control systems in response to institutional pressures for sustainability? and (ii) how the organisational adoption of sustainability embedded management control systems is influenced by market and corporate logics?

The study is being conducted by Chaminda Wijethilake (Email: ubhayasiri-chaminda-banda.n@students.mq.edu.au; Tel: 61-452 386 156) to meet the requirements of Doctor of Philosophy in Accounting and Corporate Governance under the supervision of Dr Rahat Munir (Email: rahat.munir@mq.edu.au; Tel: 61-2 9850 4765) and Dr Ranjith Appuhami (Email: ranjith.bala-appuhamilage@mq.edu.au; Tel: 61-2 9850 7295) of the Department of Accounting and Corporate Governance, Macquarie University, Australia.

If you decide to participate in this study, you will be asked to participate in an interview to describe your organisations' sustainability practices, sustainability embedded management control systems, and institutional pressures for sustainability.

The interview guide, consent form, and study details will be sent to you two weeks before the interview date. The interview will be conducted starting from the third week of October 2013 and the duration of the interview meeting will be about 60 minutes. The interview will take place at your company office. A follow-up interview may also be required to clarify any information or explanation provided in the first interview. The interview will be audio recorded with your permission and the interviewer will also take notes during the interview.

Any information or personal details gathered in the course of the study are confidential, except as required by law. No individual will be identified in any publication of the results. Only the chief investigator and the co-investigators of the project have the access to the data. Further, interview data will be treated as strictly confidential and kept in a secure place. A summary of the results of the data can be made available to you on request from the co-investigator of the research, Chaminda Wijethilake.

Participation in this study is entirely voluntary: you are not obliged to participate and if you decide to participate, you are free to withdraw at any time without having to give a reason and without consequence.

I, _(participant's name)_ have read *(or, where appropriate, have had read to me)* and understand the information above and any questions I have asked have been answered to my satisfaction. I agree to participate in this research, knowing that I can withdraw from further participation in the research at any time without consequence. I have been given a copy of this form to keep.

Participant's Name:_____
  (Block letters)

Participant's Signature: _____ Date:_____

Investigator's Name:

Investigator's Signature: _____ ___ Date:_____

The ethical aspects of this study have been approved by the Macquarie University Human Research Ethics Committee. If you have any complaints or reservations about any ethical aspect of your participation in this research, you may contact the Committee through the Director, Research Ethics (telephone (02) 9850 7854; email ethics@mq.edu.au). Any complaint you make will be treated in confidence and investigated, and you will be informed of the outcome.

Further, if you have any clarification or concern regarding the ethical aspects of this research, you may also contact Dr Athula Ekanayake, Senior Lecturer, Department of Management Studies, University of Peradeniya, Sri Lanka (email: athulae@gmail.com; telephone: 00 94 718 556 034).

APPENDIX E: SURVEY INSTRUMENTS[31]

MACQUARIE UNIVERSITY

Department of Accounting and Corporate Governance
Faculty of Business and Economics
MACQUARIE UNIVERSITY NSW 2109
AUSTRALIA
Phone: +61 (0)2 9850 4765
Fax: +61 (0) 2 9850 8497

Date …

Address

Dear Mr/Mrs …

You are invited to participate in a survey of *Management Control Systems and Corporate Sustainability Strategy*. The study is being conducted by Chaminda Wijethilake to meet the requirements of Doctor of Philosophy under the supervision of Dr Rahat Munir and Dr Ranjith Appuhami. Chaminda Wijethilake is also a lecturer at the General Sir John Kotelawala Defence University, Ratmalana, Sri Lanka.

Participation in this study is entirely voluntary and the survey is anonymous. If you decide to participate, you will be asked to complete a survey about your organisation's corporate sustainability strategy. If you feel that another person is better equipped to respond to this survey, I would appreciate it if you could pass the survey onto him or her. The survey should take approximately 15-20 minutes to complete. Return of the survey will be regarded as consent to use the information for research purposes.

Any information or personal details gathered in the course of the study are confidential, except as required by the law and only the researchers will have the access to data. No individual will be identified in any publication of the results. While a postcard is provided, the purpose of this is to inform us that you have completed the survey, thereby preventing a follow-up being sent. If you would like a copy of the results of the study, please indicate so on the postcard.

Thank you very much for your assistance.

Yours sincerely,

Chaminda Wijethilake

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[31] Note: Questions used in the Paper 2 include: 7, 8, 9, 10 Questions used in the Paper 3 include: 5, 11 Questions used for both papers include: 1, 2, 3, 4, 6

SURVEY

CORPORATE SUSTAINABILITY STRATEGY

Industry Category: ☐ Manufacturing ☐ Services

Nature of Company: ☐ Sri Lankan ☐ Multinational

Number of employees: _____

Total length of your service: _____

Your position: _____

Gender: ☐ Male ☐ Female

Age: ☐ Below 30 ☐ 30-40 ☐ 41-50 ☐ Above 50

Your highest educational qualification:
☐ PhD
☐ MA/M.Com/MBA/MSC
☐ BA/B.Com/BSC
☐ Other: _____

Place of your tertiary education: ☐ Sri Lanka ☐ Overseas

1 Please indicate the extent to which your company uses the following mechanisms to communicate sustainability core values.

	Not at all				To a great extent
	1	2	3	4	5
1. Vision and mission statements	☐	☐	☐	☐	☐
2. Strategic plans and policies	☐	☐	☐	☐	☐
3. Sustainability reports, corporate social responsibility reports, annual reports etc.	☐	☐	☐	☐	☐
4. Company-wide conferences, forums, workshops & training sessions etc.	☐	☐	☐	☐	☐
5. Intranet, websites, posters, booklets etc.	☐	☐	☐	☐	☐
6. Top management communications (e.g. minutes of board meetings)	☐	☐	☐	☐	☐

2 **Please indicate the extent to which your company adheres to the following.**

	Not at all 1	2	3	To a great 4	extent 5
1. Regular assessments of sustainability code of conducts	□	□	□	□	□
2. Ethical and professional guidelines	□	□	□	□	□
3. Guidelines on sustainability related best practices	□	□	□	□	□
4. Global Reporting Indicator (GRI)	□	□	□	□	□
5. Internal sustainability policies, structures and activities	□	□	□	□	□

3 **Please indicate the extent to which your company uses the following mechanisms to evaluate sustainability performance.**

	Not at all 1	2	3	To a great 4	extent 5
1. Standardized reporting processes (e.g. GRI & UN Global compact)	□	□	□	□	□
2. Environmental Management Systems (EMS)	□	□	□	□	□
3. Benchmarking sustainability practices with competitors	□	□	□	□	□
4. Top management's reviews of performance achievements	□	□	□	□	□
5. Environmental and social audits (both Internal and external)	□	□	□	□	□
6. Use of management tools (e.g. Kaizen, Hoshin Kanri, 5s, Just in Time (JIT))	□	□	□	□	□

4 **Please indicate the extent to which your company uses the following mechanisms for managing sustainability related uncertainties.**

	Not at all 1	2	3	To a great 4	extent 5
1. Top management's regular attention to sustainability control practices	□	□	□	□	□
2. Top management regularly interprets information on sustainability practices	□	□	□	□	□
3. Operating managers are frequently involved in sustainability practices	□	□	□	□	□
4. Regular meetings with top sustainability managers and operational managers	□	□	□	□	□
5. Exchange with major stakeholders of best practices to share sustainability innovations	□	□	□	□	□
6. Use of intranet systems for communities of practitioners	□	□	□	□	□

5   **Please indicate the extent to which the following statements are applicable to your company.**

	Not at all 1	2	3	4	To a great extent 5
1. People are penalized for new sustainability ideas that don't work	☐	☐	☐	☐	☐
2. Sustainability innovations are readily accepted in project management	☐	☐	☐	☐	☐
3. Sustainability technical innovations (research results) are readily accepted	☐	☐	☐	☐	☐
4. Sustainability innovations are perceived as too risky and are resisted	☐	☐	☐	☐	☐
5. Management actively seeks sustainability innovation and ideas	☐	☐	☐	☐	☐

6   **Please indicate the extent to which your company considers the following.**

	Not at all 1	2	3	4	To a great extent 5
1. Risks of non-compliance with legal and voluntary requirements	☐	☐	☐	☐	☐
2. Sustainability related legal and regulatory compliances (e.g. Environment Protection Licences - EPL)	☐	☐	☐	☐	☐
3. Emergence of new sustainability regulations	☐	☐	☐	☐	☐

7   **Please indicate the extent to which your company integrates the following elements into strategies.**

	Not at all 1	2	3	4	To a great extent 5
1. Promoting sustainability innovations	☐	☐	☐	☐	☐
2. Engaging in sustainability learning & knowledge management	☐	☐	☐	☐	☐
3. Developing sustainability business processes	☐	☐	☐	☐	☐
4. Promoting sustainable resources management (e.g. renewable energy)	☐	☐	☐	☐	☐
5. Reducing emissions into the air, water and ground	☐	☐	☐	☐	☐
6. Promoting and preserving biodiversity	☐	☐	☐	☐	☐
7. Minimizing the environmental consequences of products and services	☐	☐	☐	☐	☐
8. Ensuring health and safety of employees	☐	☐	☐	☐	☐
9. Investing in human capital development	☐	☐	☐	☐	☐
10. Promoting ethical behaviour and protecting human rights	☐	☐	☐	☐	☐
11. Avoiding controversial, corruption or cartel activities	☐	☐	☐	☐	☐
12. Promoting corporate citizenship	☐	☐	☐	☐	☐

8 Please indicate the extent to which the following statements apply to your company.

		Not at all 1	2	3	4	To a great extent 5
1.	Considered interests of stakeholders in investments by creating a formal dialogue	☐	☐	☐	☐	☐
2.	Communicated the firm's environmental impacts and risks to the public	☐	☐	☐	☐	☐
3.	Improved employee or community health and safety	☐	☐	☐	☐	☐
4.	Protected claims and rights of local community	☐	☐	☐	☐	☐
5.	Showed concern for the visual aspects of the firm's facilities and operations	☐	☐	☐	☐	☐
6.	Recognized and acted on the need to fund local community initiatives	☐	☐	☐	☐	☐

9 Please indicate the extent to which the following statements apply to your company.

		Not at all 1	2	3	4	To a great extent 5
1.	Worked with government officials to protect the company's interests	☐	☐	☐	☐	☐
2.	Reduced costs of inputs for same level of outputs	☐	☐	☐	☐	☐
3.	Sold waste product for revenue	☐	☐	☐	☐	☐
4.	Created spin-off technologies that could be profitably applied to other areas of the business	☐	☐	☐	☐	☐

10 Please indicate the extent to which the following statements apply to your company.

		Not at all 1	2	3	4	To a great extent 5
1.	Chose inputs from sources that are remediated or replenished	☐	☐	☐	☐	☐
2.	Reduced environmental impacts of production processes or eliminated environmentally damaging processes	☐	☐	☐	☐	☐
3.	Reduced operations in environmentally sensitive locations	☐	☐	☐	☐	☐
4.	Reduced likelihood of environmental accidents through process improvements	☐	☐	☐	☐	☐
5.	Reduced waste by streamlining processes	☐	☐	☐	☐	☐
6.	Used waste as inputs for own processes	☐	☐	☐	☐	☐
7.	Disposed waste responsibly	☐	☐	☐	☐	☐
8.	Handled or stored toxic waste responsibly	☐	☐	☐	☐	☐

11   **Please indicate the extent to which your company performed better in the following elements as compare to your competitors.**

	Not at all 1	2	3	4	To a great extent 5
1. Gaining access to new markets	□	□	□	□	□
2. Increasing market share	□	□	□	□	□
3. Increasing customer satisfaction	□	□	□	□	□
4. Gaining a higher return on investment	□	□	□	□	□
5. Gaining gross profits higher than the industry average	□	□	□	□	□
6. Product and service innovations	□	□	□	□	□
7. Process innovations	□	□	□	□	□
8. Managerial innovations	□	□	□	□	□
9. Capability to learn through internal experimental activities	□	□	□	□	□
10. Capability to acquire knowledge and technology through external links	□	□	□	□	□
11. Sustainability capabilities	□	□	□	□	□

Thank you for taking the time to complete this survey. Your assistance in providing this information is very much appreciated. Please return your completed survey in the enclosed envelop.

APPENDIX F: ETHICS APPROVAL - SURVEY STUDIES

MACQUARIE UNIVERSITY

Dear Mr Munir,

Re: 'Management control systems and corporate sustainability.'

Reference No.: 5201400337

Thank you for your recent correspondence. Your response has addressed the issues raised by the Faculty of Business & Economics Human Research Ethics Sub Committee. Approval of the above application is granted, effective "14/04/2014". This email constitutes ethical approval only.

This research meets the requirements of the National Statement on Ethical Conduct in Human Research (2007). The National Statement is available at the following web site:

http://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/e72.pdf.

The following personnel are authorised to conduct this research:

Dr Ranjith Appuhami
Mr Rahat Munir
Mr Ubhayasiri Chaminda Bandara Wijethilake

NB. STUDENTS: IT IS YOUR RESPONSIBILITY TO KEEP A COPY OF THIS APPROVAL EMAIL TO SUBMIT WITH YOUR THESIS.

Please note the following standard requirements of approval:

1. The approval of this project is conditional upon your continuing compliance with the National Statement on Ethical Conduct in Human Research (2007).

2. Approval will be for a period of five (5) years subject to the provision of annual reports.

Progress Report 1 Due: 14 Apr. 2015
Progress Report 2 Due: 14 Apr. 2016
Progress Report 3 Due: 14 Apr. 2017
Progress Report 4 Due: 14 Apr. 2018
Final Report Due: 14 Apr. 2019

NB. If you complete the work earlier than you had planned you must submit a Final Report as soon as the work is completed. If the project has been discontinued or not commenced for any reason, you are also required to submit a Final Report for the project.

Progress reports and Final Reports are available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/
human_research_ethics/forms

3. If the project has run for more than five (5) years you cannot renew approval for the project. You will need to complete and submit a Final Report and submit a new application for the project. (The

five year limit on renewal of approvals allows the Committee to fully re-review research in an environment where legislation, guidelines and requirements are continually changing, for example, new child protection and privacy laws).

4.   All amendments to the project must be reviewed and approved by the Committee before implementation. Please complete and submit a Request for Amendment Form available at the following website:

http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/human_research_ethics/forms

5.   Please notify the Committee immediately in the event of any adverse effects on participants or of any unforeseen events that affect the continued ethical acceptability of the project.

6.   At all times you are responsible for the ethical conduct of your research in accordance with the guidelines established by the University.
This information is available at the following websites:

http://www.mq.edu.au/policy/
http://www.research.mq.edu.au/for/researchers/how_to_obtain_ethics_approval/
human_research_ethics/policy

If you will be applying for or have applied for internal or external funding for the above project it is your responsibility to provide the Macquarie University's Research Grants Management Assistant with a copy of this email as soon as possible. Internal and External funding agencies will not be informed that you have approval for your project and funds will not be released until the Research Grants Management Assistant has received a copy of this email.

If you need to provide a hard copy letter of approval to an external organisation as evidence that you have approval, please do not hesitate to contact the FBE Ethics Committee Secretariat, via fbe-ethics@mq.edu.au or 9850 4826.

Please retain a copy of this email as this is your official notification of ethics approval.

Yours sincerely,

Parmod Chand
Chair, Faculty of Business and Economics Ethics Sub-Committee
Faculty of Business and Economics
Level 7, E4A Building
Macquarie University
NSW 2109 Australia
T: +61 2 9850 4826
F: +61 2 9850 6140
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