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Market drivers of sustainability and sustainability learning capabilities: The moderating role of sustainability control systems

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Abstract

This study examines (i) the impact of market drivers of sustainability on the adoption of sustainability learning capabilities and (ii) the moderating role of sustainability control systems (SCS) on the relationship between market drivers of sustainability and sustainability learning capabilities. Drawing on the levers of control framework, stakeholder theory and organisational learning literature, survey data were collected from 175 large scale local and multinational companies operating in Sri Lanka. Findings reveal that market drivers of sustainability have a significant positive impact on sustainability learning capabilities. Whereas the interactive use of SCS shows a positive moderating impact, the diagnostic use of SCS shows a negative impact. The study enhances our understanding of (i) the influence of market drivers of sustainability on the adoption of sustainability learning capabilities and (ii) the use of SCS in enabling sustainability learning capabilities. The study reveals novel insights for managers responding to changing market drivers of sustainability, on how to (re)align different uses of SCS to enable sustainability learning capabilities.

KEYWORDS

market drivers of sustainability, sustainability control systems, sustainability learning capabilities

1 | INTRODUCTION

A recent survey shows that 66% of global consumers are willing to pay more for sustainable goods (Nielsen Global Corporate Sustainability Report, 2015). This highlights the importance of sustainable business practices in the current changing global business environment. Because of unprecedented increase of sustainability challenges (e.g., threats of climate change), market drivers of sustainability (e.g., consumers, suppliers, competitors and shareholders) compel organisations to (re)design strategies and internal operational procedures to minimise the adverse social and environmental impacts of their operations (Feng, Zhao, & Su, 2014; Ling, 2019; Schrettle, Hinz, Scherrer-Rathje, & Friedli, 2014). Although a large number of organisations produce sustainability reports, the effective and actual integration of sustainability practices into core business strategies mainly depends on their ability to develop organisational learning (Kloot, 1997; Siebenhüner & Arnold, 2007).

Organisational learning is described as the process of adapting the organisation into the changing business environment (Batac & Carassus, 2009; Kloot, 1997). Prior studies suggest that proactive organisations are more likely to be well equipped with learning capabilities in their strategic responses to market drivers of sustainability (Epstein & Roy, 1997; Feng et al., 2014; Kloot, 1997; Siebenhüner & Arnold, 2007). Being proactive is an essential requirement for

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generating learning and knowledge about the adoption of new practices such as sustainability in the ability of an organisation to integrate with their stakeholders. As stakeholder demand for sustainable products and practices increases, organisations can initiate learning and change (Siebenhüner & Arnold, 2007). In this process, the use of existing knowledge may not be sufficient to address the increasing sustainability demands (Schrettle et al., 2014). Therefore, developing learning capabilities is seen as a strategic intent that helps organisations to align in a constantly changing environment. Yet, the extant literature provides little evidence on sustainability and dynamic capabilities. Although the demand for sustainable product and services appears prevalent in the current business environment (Nielsen Global Corporate Sustainability Report, 2015) and prior literature highlights the strong influence of powerful market drivers such as regulation and consumers on adoption of sustainable business practices (see Schrettle et al., 2014), relatively little attention has been paid by researchers to examine the empirical association between market drivers of sustainability and sustainability learning capabilities (Amui, Jabbour, de Sousa Jabbour, & Kannan, 2017; Schrettle et al., 2014). More specifically, Amui et al. (2017, p. 1) suggest that "research is needed on dynamic capabilities for sustainability, especially in emerging economies …." Accordingly, the first aim of this paper is to examine whether organisations' sustainability learning capabilities are influenced by the market drivers of sustainability, within an emerging economy context.

It is within this context that managers face various complexities to enable existing knowledge and facilitate new sustainability learning. In responding to these demands, the role of management control systems (MCS)[1] has been emphasised in the literature. MCS are designed to support strategic changes proactively through interactions within the organisation and its environment (Narayanan & Boyce, 2019) and facilitate organisational learning (Kloot, 1997). However, the literature also debates that MCS often hinder organisational learning capabilities (see Batac & Carassus, 2009), and there is a misfit between environmental management systems (EMS)[2] and organisational learning (Feng et al., 2014). The misfit between EMS and organisational learning refers to the inconsistent and mixed empirical findings of prior studies that have examined the relationship between environmental strategy and an organisation's performance (see Feng et al., 2014). Prior literature suggests that a proper fit between EMS and organisational learning can lead to superior performance, whereas a misfit may create operational inefficiency within the organisation (e.g., Feng et al., 2014). To ensure the fit between the organisations and the changing environment, Kloot (1997) highlights the importance of integration between organisational learning and MCS. She argues that both organisational learning and MCS have a common purpose: "both are concerned with changing or adapting an organization to ensure its fit with its environment" (Kloot, 1997, p. 53).

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

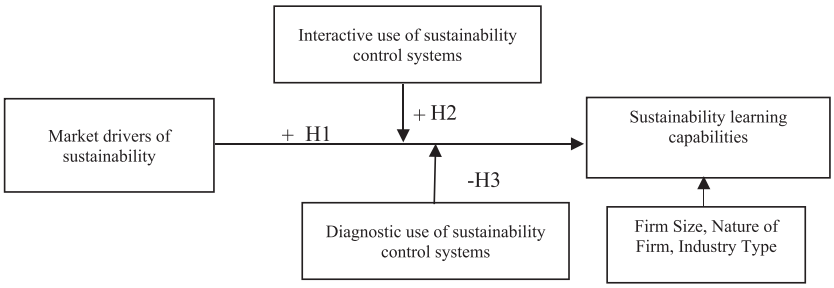
[2]Environmental management systems are "strategic management approaches that define how an organisation will address its impacts on the natural environment" (Feng et al., 2014, p. 2,901).

MCS provide information for planning, decision-making, and evaluation purposes (Widener, 2007), for exerting control to achieve organisational goals (Mundy, 2010) and in aligning organisational and behavioural structures with economic goals to improve financial performance (Gond, Grubnic, Herzig, & Moon, 2012). MCS can be seen as a lens through which organisations perceive their environment and organisational learning depends on how external reality is scanned by the organisation (Kloot, 1997). However, the roles of MCS appear limited in terms of incorporating the broader interests of a wide range of nonshareholder stakeholders and addresing the social and environmental issues faced by organisations in the current business environment (Gond et al., 2012). In order to address the limitaitons of MCS, a number of sustainability approaches have been suggested in the literature; one of these is sustainability control systems (SCS) (see Gond et al., 2012). SCS can be seen as a strand of MCS, which includes sustainability planning, environmental budgeting, sustainability performance measurement systems, sustainability balanced scorecard, environmental investment appraisal and so forth (see Gond et al., 2012 for detail). In particular, SCS are mainly used to design and implement sustainability-related strategies (Wijethilake, Munir, & Appuhami, 2018). However, some researchers argue that MCS impede organisational learning (see Batac & Carassus, 2009).

In order to examine the contradictory role of MCS, that is, whether MCS facilitate or hinder organisational learning (Batac & Carassus, 2009; Kloot, 1997), this study draws on Simons' (1995) levers of control (LOC) framework. The framework, which includes four control systems (i.e., belief, boundary, diagnostic and interactive) is seen as a useful analytical tool to manage the tension between facilitating organisational learning and exerting control to achive the organisational goals (Mundy, 2010; Simons, 1995). Prior studies (e.g., Batac & Carassus, 2009 and Kloot, 1997) provide initial evidence on the role of MCS in organisational learning. Using case studies in two organisations in Australia, Kloot (1997) investigates the links between organisational learning and MCS. Her findings show "how appropriate management control system design and use can facilitate the organizational learning necessary during periods of environmental change" (Kloot, 1997, p. 48). Building on Kloot's (1997) study, Batac and Carassus (2009) explore whether control systems foster organisational learning drawing on their case study findings obtained from a medium-sized municipality situated in the south-western France. More specifically, the authors aim to understand "which management control systems hinder the distribution of knowledge and which stimulate organizational learning?" (Batac & Carassus, 2009, p. 103). The authors find that "cultural and bureaucratic controls … tend to hinder organizational learning … In other cases, control practices seem more likely to foster adaptive and generative learning" (Batac & Carassus, 2009, p. 115).

Further, other prior studies examining sustainability learning, control systems and strategy have focused on areas such as internal and external factors influencing sustainability learning (Schrettle et al., 2014; Siebenhüner & Arnold, 2007); fit between EMS and organisational learning (Feng et al., 2014); learning methods in responding to environmental challenges (Kloot, 1997); and

FIGURE 1 Conceptual framework



organisational learning, ISO 14001 adoption and performance (Epstein & Roy, 1997). Yet, little is known about the proper alignment between market drivers of sustainability, the role of control systems and sustainability learning capabilities. For instance, Schrettle et al. (2014, p. 74) highlight that "it is not clear how firms can control the relevant stock of knowledge, which is necessary to realise sustainable activities." Accordingly, the second aim of this paper is to examine whether interactive and diagnostic use of SCS moderate the relationship between market driver of sustainability and sustainability learning capabilities.

2 | BACKGROUND LITERATURE AND HYPOTHESES DEVELOPMENT

Empirical evidence shows that proper alignment between sustainability strategies and operational practices leads to the accomplishment of sustainability objectives (e.g., Feng et al., 2014). However, effective implementation of sustainability strategies requires substantial change in conventional operations, where the role of organisational learning and control systems is seen as important (Gond et al., 2012; Siebenhüner & Arnold, 2007; Wijethilake et al., 2018). For example, if the organisations intend to incorporate social and environmental attributes in their products, the production process or products "… need to be re-invented, controlling systems have to integrate new sets of data, external and internal communication strategies require revisions …" (Siebenhüner & Arnold, 2007, p. 340). All of this highlights the need for new knowledge or organisational learning and appropriate use of control systems (i.e., SCS). Building on prior studies on organisational learning (i.e., Argyris, 1976; Batac & Carassus, 2009; Kloot, 1997; Siebenhüner & Arnold, 2007) and MCS, sustainability and SCS (i.e., Gond et al., 2012; Simons, 1995), this study examines the moderating effects of SCS (in particular, interactive and diagnostic use of controls) in the association between market drivers of sustainability and sustainability learning capabilities. Although Simon's (Simons, 1995) LOC framework includes four LOCs (i.e., belief, boundary, diagnostic and interactive), this study proposes hypotheses based on interactive and diagnostic control systems. Whereas some prior studies have used all four LOCs (see Mundy, 2010), others have only used one control system (i.e., interactive), and several others have used two controls (i.e., interactive and diagnostic; see Henri, 2006). Accordingly, Figure 1 depicts the conceptual framework of the study.

2.1 | Market drivers of sustainability and the adoption of sustainability learning capabilities

Stakeholder theory (see Deegan & Unerman, 2011; Freeman, 1984) explains the organisations' relationship with their stakeholders, which includes how organisations interact with the particular stakeholder groups. Effective management of stakeholders' demand depends on the rights and power of stakeholder groups, which is described by two different perspectives of stakeholder theory: normative and managerial branch (see Deegan & Unerman, 2011). A normative perspective of stakeholder theory focuses on the social responsibility of the business, whereas a managerial perspective only considers the expectations of powerful stakeholders such as financial stakeholders, government regulator–consumer interest groups, NGOs and the media. Failing to meeting the demand of powerful stakeholder groups may result in penalty, consumer boycott or even threaten their survival.

Some organisations proactively take initiatives to address the sustainability challenges, whereas others reactively engage to meet the stakeholders' demand for sustainability. Prior studies suggest that organisations face increased demand from their external stakeholders, which can include regulators, investors, suppliers, customers/consumer, competitors and the general public/community/NGOs (Rivera-Camino, 2007; Schrettle et al., 2014; Siebenhüner & Arnold, 2007). Consistent with stakeholder theory, these external stakeholder groups' demands can be referred to as the market drivers of sustainability (Schrettle et al., 2014), which influence organisations to adopt sustainable business practices.

Schrettle et al. (2014) argue that regulation[3] is seen as one of the powerful drivers of sustainability, as violation of environmental regulation can have negative consequences such as penalty and loss of licence. Investors have a strong influence over the organisational operations as poor and problematic practices can tarnish their reputation and image (Rivera-Camino, 2007; Schrettle et al., 2014; Siebenhüner & Arnold, 2007; Wijethilake et al., 2018). Similarly, organisations may face strong demands for sustainable products from their international customers (Rivera-Camino, 2007; Wijethilake et al., 2018), and suppliers may consider the quality of their customers (i.e., organisations), as their behaviour and reputation can have an influence on suppliers' sustainability (Rivera-Camino, 2007; Schrettle et al., 2014; Siebenhüner & Arnold, 2007). Competitors' values, norms,

[3]We also acknowledge the international standards or industry standards as external market drivers.

best practices and innovative products and services are likely to set the sustainability agenda for the rest of the organisations in the industry (Rivera-Camino, 2007; Schrettle et al., 2014). Because of their negative impacts on the environment, organisations also face strong public pressure, as Siebenhüner and Arnold (2007, p. 350) suggest "… in large companies, public pressure and the fear of reputation losses drive learning and change processes to a large extent." In order to respond to increasing stakeholders' demands and to cope with the changing global business environment, organisations must find ways to change and adapt themselves, and this will largely depend on their ability to develop learning capabilities (Kloot, 1997).

Argyris (1976, p. 365) defines organisational learning as "the detection and correction of errors …." In other words, detection of error is referred to as a problem or the learning need recognised by the learner, and the correction of error or solving the problem is related to the motivation to learn (Kloot, 1997). Kloot (1997, p. 49) describes organisational learning as a "process by which the organisation (i) detects problems (within and outside) and scans environmental changes that will result in a lack of fit between the organisation and the environment (ii) determines the solutions and how to adapt to environmental change." Organisation learning, which plays an important role in terms of problem solving and decision-making, is seen as crucial to organisational survival and success (Argyris, 1976; Kloot, 1997).

Argyris (1976) categorised learning as being single loop and double loop. Single-loop learning is related to when employees are encouraged to "learn to perform as long as the learning does not question the fundamental design, goals and activities of their organisations," whereas double-loop learning involves "asking questions about changing fundamental aspects of the organization" (Argyris, 1976, p. 367). In other words, single-loop learning involves minor changes to existing policies and practices, whereas double-loop learning involves questioning the existing policies and practices and requires fundamental change.

The use of both single-loop (also called adaptive) and double-loop (also called generative) learning practices is important to foster sustainability. For example, providing sustainability-related trainings to employees in order to implement sustainability policies and practices can be related to single-loop learning. Haugh and Talwar (2010) suggest that organisations enable sustainability learning through various means, such as codes of conduct, measuring impacts, formal structures and policies, supply chain management procedures, communication and interactions and human resource development initiatives. On the other hand, when organisations make radical change to shift their focus towards sustainability, this can be referred to as double-loop learning. Whereas the single-loop learning (e.g., sustainability training to employees) is intended to help the workforce to adapt to the changing environment, the double-loop learning (e.g., revolutionary move towards sustainability) is related to the organisation's improved performance and long-term survival (Argyris, 1976; Kloot, 1997). This is because "when sustainability is the basis of the competitive advantage of the firm, then learning about sustainability becomes a fundamental core competency" (Haugh & Talwar, 2010, p. 386).

Organisational ability to manage effective learning relationships with stakeholders has gained increasing attention in organisational strategies, as competitiveness largely depends on networks in which the organisation operates. Considering learning as an investment, Feng et al. (2014) highlight the importance of organisational learning in terms of adopting and implementing sustainability-related strategies. Feng et al. (2014) further suggest that employees can also learn from their external stakeholders apart from their colleagues within their organisation. Organisations with proactive sustainability strategies establish alliances, partnerships and networks with their stakeholders, to address sustainability concerns by establishing strong sustainability learning capabilities. Nidumolu, Prahalad, and Rangaswami (2009) noted that smart organisations consider collaborative capacity building and making alliances with stakeholders, such as other businesses, non-governmental organisations and governments, as an essential rule of producing sustainability innovations. This is mainly because (i) competitors are more likely to adopt sustainability management practices, the focal organisation is compelled to better perform in securing their market base (Delmas & Toffel, 2008) and (ii) use of existing knowledge may not be sufficient to address the increasing sustainability demands (Schrettle et al., 2014; Siebenhüner & Arnold, 2007). Organisations with effective corporate sustainability reporting would enhance the accountability and transparency of doing business, which, in turn, may help to develop positive corporate relations among stakeholders. Based on the above discussion, the following hypothesis is proposed.

Hypothesis 1. Market drivers of sustainability can positively influence the adoption of sustainability learning capabilities.

2.2 | The moderating role of SCS on the relationship between market drivers of sustainability and sustainability learning capabilities

Although the traditional role of MCS is seen as to facilitate financial decision-making, researchers have emphasised the need for a change in the traditional role and incorporate the requirements of sustainable development and integrate the broader needs of non-shareholder stakeholders (Gond et al., 2012). The role of SCS has emerged to meet the changing need of traditional MCS, which is to respond to an evolving sustainability agenda (Larrinaga-Gonzalez & Bebbington, 2001). Extant literature shows that managers face unprecedented challenges that require the application of new accounting tools to plan, monitor and evaluate performance in a wide range of activities, within and outside the organisation (Adams & Larrinaga, 2019). A well-designed SCS should support the top management in quality and effective strategic decision-making and achieving organisational goals (Wijethilake et al., 2018). In so doing, Kloot (1997) suggests some of the features that need to be included in MCS design, such as knowledge acquisition, information distribution, information interpretation and organisational

memory. This is mainly because the inclusion of such constructs can help organisations to learn and survive, especially during times of uncertainty and change (Kloot, 1997). Feng et al. (2014) emphasise the importance of a proper fit between environmental strategy and organisational learning to achieve the desired outcome. While the importance of learning is highlighted in the prior literature (see Feng et al., 2014; Kloot, 1997), what is less known is what specific MCS support or hinder organisational learning capabilities in response to environmental change (Batac & Carassus, 2009; Feng et al., 2014; Kloot, 1997). Hence, this study applies Simons' (1995) LOC framework to examine the moderating role of SCS (in particular, the use of interactive and diagnostic controls) in association between the market drivers of sustainability and sustainability learning capabilities.

2.3 | SCS: An LOC perspective

Simons (1995) proposes four LOC, namely, belief, boundary, diagnostic control and interactive control systems that organisations use to design and implement strategies. Belief systems, which include vision and mission statement, facilitate communicating organisational core values among stakeholders. Boundary systems, which include code of conduct, policies, regulatory and voluntary compliances and guidelines, help organisations to avoid strategic risks in the course of operations (Simons, 1995). Diagnostic control systems that include key performance indicators and benchmarking best practices focus on measuring organisational performance. The diagnostic use of controls monitors organisational outcomes, corrects deviation from preset standards and prevents employees from engaging in risky operations beyond the organisational norms and conditions (Simons, 1995). The underlying logic behind the use of diagnostic controls is to restrict employees' conduct to within the accepted boundaries and ensure compliance with preset norms and standards. Interactive control systems are used by senior managers to facilitate learning and the bottom-up emergence of new strategies (Simons, 1995). Simons (1995) argues that the interactive use of control systems promotes cohesion among employees, empowers employees, facilitates open communication and motivates proactive and innovative strategic initiatives. Accordingly, the study aims to examine the opposite nature of interactive and diagnostic uses of controls on the adoption of sustainability knowledge capabilities in responding to market drivers of sustainability.

Simons (1995) argues that whereas belief and interactive control systems show a positive connotation, in contrast, boundary and diagnostic control systems show a negative connotation. Altogether, four control systems show a positive impact on organisational performance. While Simons (1995) emphasises that organisational success depends on how these four controls are used simultaneously rather than individually, the LOC framework has also been criticised for being vague and ambiguous (Kruis, Speklé, & Widener, 2016). For example, Kruis et al. (2016) question the notion of balance in the framework in managing the dynamic tension between compliant behaviour and creative search efforts for organisational success.

Despite the criticism, Simons' (1995) LOC framework has been widely used by prior research studies and has received considerable attention in the sustainability and management literature. The framework has been well recognised in the design and implementation of sustainability strategies (see Arjaliès & Mundy, 2013; Gond et al., 2012). This study refers to interactive and diagnostic uses of SCS, as these two control systems have widely been recognised in the context of sustainability management (Wijethilake et al., 2018) and seen as relevant in examining whether the use of these controls facilitates or hinders organisational learning (Batac & Carassus, 2009). Wijethilake et al. (2018) argue that the adoption of environmental innovation strategy does not lead to performance improvements, but appropriate (i.e., enabling and controlling) use of MCS can have an impact on the strategy—performance relationship. However, in a recent study, Narayanan and Boyce (2019) found that MCS did not play a transformative role in organisational change towards sustainability. In order to address the inconsistent role of MCS in the sustainability literature, this study aims to make a significant contribution by examining the moderating role of interactive and diagnostic control systems on the association between market drivers of sustainability and sustainability learning capabilities.

2.4 | Moderating impact of the interactive use of SCS

The use of interactive controls is seen as a positive force that senior managers use to expand opportunity seeking (Henri, 2006); recognise the emerging sustainability trends and incorporate the diverse views of external stakeholders (Arjaliès & Mundy, 2013; Wijethilake et al., 2018); and facilitate learning and promote cohesion among employees (Simons, 1995; Widener, 2007). Interactive control systems guide organisations to prepare for appropriate strategic changes by nurturing dialogue and the negotiations required for both external and internal environments.

Senior managers use interactive controls to incorporate the views of external stakeholders such as investors, suppliers, customers, NGOs and the local communities (Arjaliès & Mundy, 2013). Feng et al. (2014) argue that employees should learn from these stakeholder groups to gain knowledge related to dealing with social and environmental issues. This is because these stakeholder groups are seen as powerful market drivers and can have an influence on organisations' sustainability practices. Learning from their stakeholders and adopting their best practices (Arjaliès & Mundy, 2013) can help organisations to minimise the uncertainties associated with changing market needs and stakeholders demands. However, it depends on how well organisations can incorporate the diverse view of stakeholders and implement the best sustainability practices within their organisation.

Interactive control systems are designed to facilitate proactive strategies as a means of responding to dynamic market changes

(Widener, 2007). Interactive control systems also foster sustainability learning capabilities by promoting relational networks, in terms of organising, coordinating and circulating information and knowledge throughout the organisation (Henri, 2006). Sustainability-related training and development programs can be seen as useful for employees to acquire knowledge, gain practical insights, develop commitment to sustainability and change the way they work. Failure to align sustainability learning capabilities with employees' interests may not help organisations achieve the successful implementation of sustainability strategies (Haugh & Talwar, 2010). Interactive control systems encourage employees to engage in the learning activities and share their experience and knowledge among their organisational networks (Simons, 1995). Importantly, free and flexible networks of communication channels facilitated by interactive control systems encourage employees to build effective relationships with both internal and external stakeholders as a way of promoting sustainability learning capabilities, which will ultimately help an organisation implement the best practices learned from external stakeholders.

Interactive use of SCS enables senior managers to gain a broader understanding of the new opportunities, share sustainability-related information with their employees and incorporate the major external stakeholders' view in their sustainability practices and promote sustainability learning within the organisation (Arjaliès & Mundy, 2013; Henri, 2006 ; Simons, 1995). The use of interactive controls helps managers to recognise the emerging sustainability trends, stakeholders' demand and threats from the changing environment, which senior managers can then discuss with their subordinates to initiate the bottom-up innovative strategies. Managers can also use interactive controls to facilitate open communication of sustainability information and stimulate learning (Simons, 1995). By using interactive control systems, managers can develop a novel strategic direction to mitigate the risks associated with the changing market environment or market drivers of sustainability. This means that the interaction of the use of interactive controls with the market drivers of sustainability can help organisations make a clear alignment with their strategies (Henri, 2006) and promote senior managers to stimulate organisational learning (Kloot, 1997; Simons, 1995).

Interactive use of SCS can be used to foster double-loop learning (Kloot, 1997), especially when organisations shift their focus to proactively respond to sustainability challenges. The interactive use of controls enables senior managers to engage in dialogue and debate with employees, to facilitate the emergence of new bottom up strategies and ideas (Batac & Carassus, 2009; Kloot, 1997). Interactive control systems also promote learning capabilities by (i) concentrating strategic uncertainties in which the role of knowledge capabilities is particularly important, (ii) promoting organisational networks and (iii) facilitating knowledge sharing (Henri, 2006). These approaches enable employees to obtain sustainability knowledge and best practices from their stakeholders (Feng et al., 2014). In this way, the interactive use of SCS also enhances relational sustainability capabilities, as it fosters relational skills such as providing capabilities to develop and oversee relationships, obtaining and disseminating information and knowledge, innovations and flexible coordination with stakeholders. As interactive control systems facilitate innovativeness, responsiveness to changes and adaptability, such controls would promote sustainability learning capabilities, as a means of responding to changes of market drivers of sustainability. The approach that top management chooses to follow in terms of sustainability practices will necessarily reveal avenues that motivate employees to pursue sustainability learning. Therefore, the use of interactive controls can be seen as a positive force, which can have an impact on the association between market drivers of sustainability and organisations' sustainability learning capabilities. Accordingly, the study proposes the second hypothesis as follows:

Hypothesis 2. The interactive use of sustainability control systems positively moderates the relationship between market drivers of sustainability and sustainability learning capabilities.

2.5 | Moderating impact of the diagnostic use of SCS

In contrast to interactive control systems, which are seen as a positive force, the objective of using diagnostic control systems is to minimise and avoid employees' excessive risk-taking activities (Simons, 1995). Diagnostic control systems are also used to constrain innovation and opportunity seeking and achieve intended strategies (Simons, 1995). Henri (2006) refers to the use of diagnostic control systems as a negative force as it focuses on mistakes and negative aspects. The use of diagnostic control systems is seen as a traditional feedback system, where senior managers can evaluate performance against given targets (Henri, 2006; Simons, 1995). Managers use diagnostic controls to motivate employees for goal achievement and focus on correcting deviations from the predesigned targets. In terms of sustainability initiatives, organisations can use diagnostic control systems to implement sustainability strategies, control sustainability-related costs and measure sustainability performance (Arjaliès & Mundy, 2013). The use of diagnostic controls also helps managers to ensure compliance with external regulations or environmental standards. As diagnostic control systems are more likely to authenticate organisational performance with predesigned standards, Henri (2006) argues that such controls are identified as a negative influence that merely highlights the compliance with orders.

Prior studies suggest that the use of diagnostic control systems is important as it helps managers to detect errors or deviations from the preset target and compliance against external standards (Arjaliès & Mundy, 2013; Henri, 2006; Simons, 1995). When errors or deviations from the performance targets are detected, the correction of such errors or deviations can confirm that the process of organisational learning has taken place in the organisation (Batac & Carassus, 2009). It shows the interaction of the use of diagnostic control systems with regard to the organisation's compliance with external regulations or environmental standards, which, in turn, encourages organisational learning.

Given the inherent nature of the "negative constraint" of diagnostic use of SCS, organisations are likely to implement sustainability dynamic capabilities by restricting to a predetermined domain. For instance, diagnostic control systems show features of conventional mechanistic control systems, including (i) strict channels of information communication and sharing (ii); tight and formal rules and practices; and (iii) concentrated decision-making procedures (Henri, 2006). The close-fitting nature of formal diagnostic control systems set barriers on the design and implementation of strategies, resulting in organisational hesitancy to proceed with boundary spanning learning practices. It follows that the combination of the use of diagnostic controls with external compliance, which is also seen as the market drivers of sustainability, can have a negative impact on organisational learning as its use is mainly focused on detecting deviance or errors (Henri, 2006).

Detection of errors or deviations from the performance target or compliance can lead to certain changes in the methods implemented by the organisations (Batac & Carassus, 2009) to achieve sustainability strategies. Making some minor change in the existing methods, procedures, policies and practices in order to achieve organisations' objectives is referred to as single-loop learning (Argyris, 1976). Other examples include, when things are wrong and actions are not in line with plans and problem solving (Kloot, 1997). Therefore, it can be argued that the diagnostic use of SCS promotes single-loop learning. As outlined above, the main premise in single-loop learning is that organisations identify errors and apply remedies to correct them (Argyris, 1976), which underlies the fundamental expectations of the diagnostic use of SCS.

Driven by the reactive and restricted nature of management approaches, diagnostic control systems also tend to avoid or minimise risk-taking learning approaches that lead to risky innovations (Wijethilake et al., 2018). Highly concentrated on compliance with norms, established principles and policies, diagnostic control systems naturally hinder proactive sustainability learning capabilities, as such capabilities require open thinking, innovative approaches, flexible and free flow of information and communication channels and the generation of new ideas. The main reason for using diagnostic controls by the senior managers is to ensure a fit between the organisation and the external environment (Kloot, 1997; Simons, 1995). Further, the highly controlled nature of communication in diagnostic control systems discourages knowledge dissemination, information sharing and networking opportunities within organisations. As argued by Bisbe and Malagueño (2015), diagnostic control systems do not foster fruitful thoughts, discussions or the learnings that are considered as essential characteristics to address complexities and strategic uncertainties. Additionally, rigid systematic routines set barriers for information processing and lead to inadequate interactions among stakeholders. Accordingly, the study proposes Hypothesis as follows:

Hypothesis 3. The diagnostic use of sustainability control systems negatively moderates the relationship between market drivers of sustainability and sustainability learning capabilities.

3 | METHODS

3.1 | Sample and data collection

The study employed Dillman's (2000) survey design procedures. The sample of this study includes 700 large-scale manufacturing and services organisations operating in Sri Lanka. Being an emerging economy, studying the extent to which market drivers influence the adoption of sustainability learning capabilities is important, as the country is a sustainability sensitive context in both manufacturing and services industries for several reasons. First, recognising its natural beauty, rich environmental resources, ancient, historical and archaeological resources, in 2019, the Lonely Planet ranked Sri Lanka as the number one country to visit. Second, the United Nations Development Programme has recognised Sri Lanka as one of the unique hotspots for biological diversity in the world. Third, Sri Lanka's apparel industry, referred to as the "apparel without guilt," contributes a significant portion of the world market demand. Among other countries in the apparel industry, Sri Lanka has been recognised as a "sustainable apparel export nation." Fourth, Sri Lanka is one of the pioneering countries in the production of premium quality tea in the global market. Ceylon Tea is a symbolic brand in terms of fair trade, carbon neutral and sustainable farming practices on the world market. Prior literature has recognised Sri Lanka as a rich context in which to understand sustainability implications and management best practices (see Wijethilake, Munir, & Appuhami, 2017). Accordingly, the sample in this study is broadly categorised as manufacturing and services that include a variety of industry categories.

Sample organisations were selected from the institutional databases, such as the Colombo Stock Exchange, the Ceylon Chamber of Commerce, the International Chamber of Commerce Sri Lanka, and the Board of Investment Sri Lanka. At the collection of data, Sri Lanka did not have a comprehensive single database representing all the sectors and scales of the businesses. Postal and online modes of survey were sent to 700 organisations that employ more than 50 employees. Pondeville, Swaen, and De Rongé (2013) suggest that organisations having more than 20 employees are more likely to implement environmental management control practices. Only one survey was sent to one organisation. Mode of survey distribution was based on the availability of responding organisations' contact details on their websites, in annual reports and the above mentioned databases. Out of the total distributed surveys, 440 were paper based, and 260 were online. A total of 202 surveys were returned after the second reminder, out of which 27 were removed because of missing data of more than 5%, leaving 175 (82 online and 93 paper based) usable surveys. The final response rate was 25%.

Several careful steps were taken to minimise the potential for common method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). First, a pilot test was conducted among 20 senior academics and researchers in the sustainability management and accounting disciplines. This was useful to clarify ambiguous items and ensure the consistency of measurement items that they intend to measure. Second, consistent with the university's Human Research

Ethics Guidelines, the survey precisely indicated the anonymity, privacy and confidentiality of the data collected. Finally, Harman's one-factor test was conducted to assess for common method variance (Podsakoff et al., 2003). The first factor accounts for 47% of the variance, which is below the accepted norm of more than 50% variance among variables (Podsakoff et al., 2003). As shown in Table 1, the nonresponse bias assessment based on a two-sample *t* test reveals that there were no significant differences between the early-late and the online-postal responses for all the variables. Table 2 provides the responding companies' profile and participants' demographic statistics.

3.2 | Measurements

Survey responses were measured on a Likert type scale of 1 to 5, where 1 represents "not at all" and 5 "to a greater extent." All the survey measurement items were adopted from validated prior literature. Cronbach's alpha values (market drivers of sustainability = .918; interactive use of SCS = .931; diagnostics use of SCS = .877; and sustainability learning capabilities = .896) are well above the acceptable norm of .7 (Hair, Hult, Ringle, & Sarstedt, 2014). Market drivers of sustainability are referred to as the extent to which external market stakeholders explicitly or implicitly influence organisations to adopt sustainability practices (e.g., Crittenden, Crittenden, Ferrell, Ferrell, & Pinney, 2011; Delmas & Toffel, 2008; Schrettle et al., 2014). Market drivers of sustainability were measured using six items. These measurement dimensions include new sustainability regulations; sustainability products in adjacent industries; competitors' sustainability market tactics; new industry entrants with sustainability products and services; volatility of input costs; and external stakeholder pressure. Each item was adopted from prior literature (see Crittenden et al., 2011; Wijethilake, 2016). Sustainability learning capabilities are referred to as the organisational learning practices that develop capabilities and potential to respond and manage emerging sustainability requirements (Feng et al., 2014). Sustainability learning capabilities represent nine items that were adopted from prior literature (Feng et al., 2014; Henri, 2006). Dimensions of sustainability learning capabilities include sustainability learning as a core value; knowledge about industry's sustainability expectations; risk of quitting sustainability learning; employees' sustainability learning as an investment and impact on corporate success; learning through internal experiments and external links; and emergence of new sustainability technology.

Simons (1995, p. 93) noted that "… senior managers use interactive control systems to build internal pressure to break out of narrow

TABLE 1 Assessment for nonresponse bias

Variable	Early (*n* = 109)	Late (*n* = 66)	Online (*n* = 82)	Postal (*n* = 93)
1. Market drivers of sustainability	3.23	3.26	3.29	3.16
2. Sustainability learning capabilities	3.66	3.69	3.71	3.62
3. Interactive use of SCS	3.39	3.19	3.29	3.34
4. Diagnostic use of SCS	3.33	3.10	3.19	3.29

Abbreviation: SCS, sustainability control systems.

TABLE 2 Responding companies' profile and demographic statistics

	Frequency	Percentage
Panel A: Responding company profile		
Company type		
Local/domestic	137	78.3
Multinational	38	22.7
Industry classification		
Manufacturing	79	45.1
Services	96	54.9
Company size (number of employees)		
Up to 100	29	16.6
101–1,000	83	47.4
1,001–10,000	50	28.6
Over 10,000	13	7.4
Panel B: Profile of respondents:		
Managerial position		
CEO/MD/GM	68	38.8
Directors/CFOs	50	28.8
Senior managers	50	28.4
Managers	7	4.0
Managerial experience		
Up to 5 years	40	22.9
5–10 years	31	17.7
10–20 years	63	36.0
Over 20 years	41	23.4
Highest level of qualifications		
Doctoral level	6	3.4
Postgraduate	87	49.7
Bachelors	32	18.3
Professional	50	28.6
Gender		
Male	149	85.1
Female	26	14.9
Age		
Below 30 years	19	10.9
30–40 years	50	28.6
41–50 years	51	29.1
Above 50 years	55	31.4
Context of educational qualifications		
Local	137	78.3
Overseas	38	22.7

search routines, stimulate opportunity-seeking, and encourage the emergence of new strategic initiatives." Following Simons (1995), six items to measure interactive uses of SCS were adopted from Wijethilake (2016). Dimensions of interactive control systems include top management's regular attention and interpretation of sustainability control and information systems; operating managers' frequent involvement in sustainability operations; regular sustainability meetings and workshops between senior and operational managers; exchange of sustainability best practices with stakeholders; and the use of intranet systems to communicate sustainability practices. Simons (1995, p. 155) highlighted that the objective of using diagnostic control systems is to cater the organisational information needed "to gain coherence over the multiple functional strategies that coalesce into realized strategies." Following Simons' (1995) definition, the six items to measure diagnostic uses of SCS were adopted from Wijethilake (2016). Items referred to measure the diagnostic uses of SCS, including compliance with standardised sustainability reporting practices; adoption of EMS; benchmarking competitors' sustainability best practices; top management's sustainability performance reviews; conducting environmental audits; and the use of modern management tools. Referring to the prior literature, the study used three control variables, namely, firm size (measured by number of employees), nature of the firm (measured by companies operating in local or multinational context) and the industry type (measured by company's operations are in manufacturing or services) (Feng et al., 2014; Wijethilake, 2016).

3.3 | Analysis

Before the hypothesis testing, data were cleaned by eliminating extreme values, missing values and checking for normality. SPSS 25 statistical data analysis software was used to perform these analyses. To mitigate the multicollinearity, the study adopted Friedrich's (1982) standardised variable approach. The study tested hypotheses and moderating effects using hierarchical moderated linear regression analysis. Following Aiken, West, and Reno's (1991) suggestions that plotting interaction terms is the preferred way to depict the results for regression analysis, the analysis demonstrates graphs for interaction terms as a supplementary analysis. In testing multicollinearity, the study examined the variance inflation factor (VIF). The maximum VIF recorded was 3.93, which is well below the commonly accepted standard of 10, which asserts that multicollinearity is not present among the considered variables.

4 | RESULTS

Table 3 presents descriptive statistics including means, standard deviations and correlations. It shows that there are no significant multicollinearity issues among variables.

Table 4 presents the results of the hierarchical moderated linear regression analysis for the proposed four models. The first model was tested with only control variables, and the influence of the independent variable was analysed in Model 2. As the third step, moderating variables were examined, while the full model includes the interaction terms represented in Model 4. As shown in Model 4, significant interaction shows a moderating impact (Baron & Kenny, 1986).

Model 1 depicts the impacts of control variables. Among the three control variables, only the industry context shows a positive significant impact. The findings also indicate that firm size and industry type do not have a statistically significant impact on the sustainability learning capabilities in any of the three models. Hypothesis proposed a significant positive impact of market drivers of sustainability on the adoption of sustainability learning capabilities. As depicted in Model 2, this proposition is supported (β = .735, p = .001, t = 14.18). Model 3 shows the impact of both interactive and diagnostic uses SCS. As shown in the model, all three variables have a significant positive impact on the adoption of sustainability learning capabilities: market drivers of sustainability (β = .298, p = .001, t = 4.75); interactive use of SCS (β = .310, p = .001, t = 3.82); and diagnostic use of SCS (β = .315, p = .001, t = 4.06). Hypothesis predicted a significant positive moderating impact of interactive use of SCS on the relationship between market drivers of sustainability and the adoption of sustainability learning capabilities. As predicted, shown in Model 4, this hypothesis is supported (β = .217, p = .05, t = 2.81). In contrast, Hypothesis predicted a negative moderating impact of the diagnostic use of SCS. Results shown in Model 4 confirm this proposition (β = −.197, p = .10, t = −2.50). Confirming the above analysis, Figures 2 and 3 depict the plot analysis of the moderating impacts of interactive and diagnostic uses of SCS. More specifically, as depicted in Figure 2, when the interactive use of SCS is high, the impact of market drivers of sustainability on sustainability learning capabilities tends to be stronger. In contrast, as shown in Figure 3, when the diagnostic use of SCS is high, the

TABLE 3 Means, standard deviations and correlations

Constructs	Mean	SD	1	2	3	4
1. Market drivers of sustainability	3.22	.900	1			
2. Sustainability knowledge capabilities	3.52	.872	740	1		
3. Interactive use of SCS	3.32	.935	728	786	1	
4. Diagnostic use of SCS	3.24	.984	694	778	831	1

Note: All correlations are significant at the 0.01 level (two-tailed).
Abbreviation: SCS, sustainability control systems; SD, standard deviation.

TABLE 4 Results from hierarchical regression analysis

Variable	Model 1	Model 2	Model 3	Model 4	VIF
Firm size	−.003	−.043	−.051	−.058	1.07
Industry context	.143*	.043	.019	.013	1.11
Industry type	−.077	−.060	.007	.001	1.07
Market drivers of sustainability ()		.735**	.298**	.291**	2.35
Interactive use of SCS			.310**	.332**	3.93
Diagnostics use of SCS			.315**	.288**	3.56
Market drivers × Interactive use of SCS ()				.217***	3.57
Market drivers × Diagnostic use of SCS ()				−.197****	3.72
R^2	.029	.555	.710	.723	
F value change	1.72	201.10**	44.72**	3.97****	

Note: *n* = 175. Standardised coefficients are reported.
Abbreviations: SCS, sustainability control systems; VIF, variance inflation factor.
*$p \leq .10$,
**$p \leq .001$,
***$p \leq .01$,
****$p \leq .05$.

impact of market drivers of sustainability on sustainability learning capabilities tends to be weaker.

5 | DISCUSSION

The first purpose of this study was to examine whether organisations' sustainability learning capabilities are influenced by the market drivers of sustainability. Based on the survey data collected from 175 large-scale manufacturing and services organisations operating in Sri Lanka, the study finds that adoption of sustainability capabilities is positively associated with the market drivers of sustainability. The findings provide insights into the adoption of sustainability learning capabilities in the current changing business environment, where organisations are facing increased demand for sustainable products and services from powerful market drivers (see Schrettle et al., 2014), and consumers are willing to pay more for sustainable products (Nielsen Global Corporate Sustainability Report, 2015). The findings can be explained by the fact that market drivers of sustainability are rapidly increasing because of the negative environmental impacts of organisations, new industry standards, regulations and strong stakeholder demand for sustainable products and practices (Rivera-Camino, 2007; Schrettle et al., 2014; Siebenhüner & Arnold, 2007). Furthermore, as previously stated, failure to address such concerns by organisations can result in long-term negative consequences such as penalties and even loss of licence.

By responding to the call for research to examine the empirical association between market drivers of sustainability and learning capabilities (Amui et al., 2017; Schrettle et al., 2014), the findings

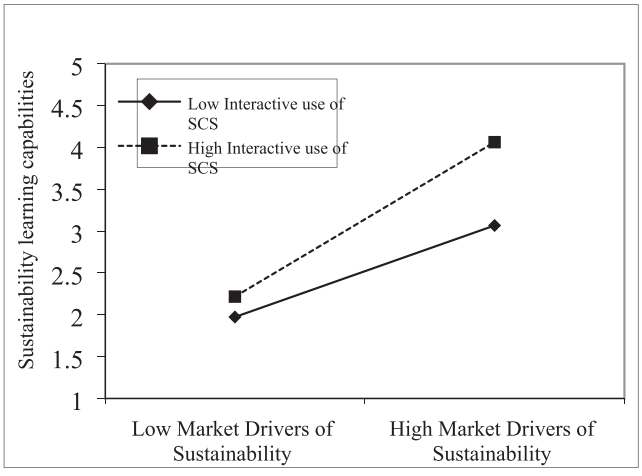


FIGURE 2 Moderating impact of interactive use of SCS on the relationship between market drivers of sustainability and sustainability learning capabilities

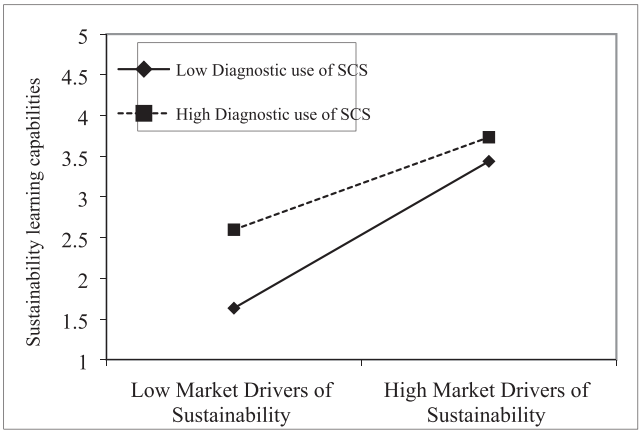


FIGURE 3 Moderating impact of diagnostic use of SCS on the relationship between market drivers of sustainability and sustainability learning capabilities

provide evidence to support the proposition from Schrettle et al. (2014) that an increased demand of external sustainability drivers can influence organisations' sustainability efforts to a greater extent and vice versa. This may be partly because organisations' learning orientation is seen as a predictor of operational efficiency and improved performance (Feng et al., 2014). The findings are also consistent with the study by Siebenhüner and Arnold (2007), which found that external factors, such as actual or anticipated stakeholder pressure, are the determining factors in their sustainability-oriented learning process, especially in large organisations. The findings support the managerial branch of stakeholder theory (see Deegan & Unerman, 2011), which suggest that organisations adopt sustainable business practices to fulfil the increasing demand of powerful stakeholders.

The second purpose of the study was to examine whether interactive and diagnostic uses of SCS moderate the relationship between market drivers of sustainability and sustainability learning capabilities. By examining the interaction effect of the use of interactive and diagnostic controls, in combination with the market drivers of sustainability, this study provides evidence that sheds light on the academic debate about whether the use of MCS promotes or hinders organisational learning (see Batac & Carassus, 2009). The findings show that the interactive use of SCS positively moderates the relationship between market drivers of sustainability and sustainability learning capabilities, whereas the diagnostic use of SCS negatively moderates that relationship.

The positive moderating role of the interactive use of SCS supports the view that instead of merely complying with market drivers of sustainability or implementing sustainability practices on an ad hoc basis, organisations need to be one step ahead and take proactive approaches to adopting sustainability practices (Wijethilake et al., 2018). By extending prior studies (e.g., Batac & Carassus, 2009; Kloot's, 1997), this study empirically confirms that the interactive use of SCS fosters sustainability learning capabilities. On the other hand, the negative connotation depicted by the diagnostic use of SCS highlights its role in detecting errors, deviations from the preset performance targets and ensuring compliance with external standards/regulations (Arjaliès & Mundy, 2013; Henri, 2006; Simons, 1995).

The findings of this study provide novel insights into the advancement of SCS by establishing a previously missing link between sustainability learning capabilities and SCS. More specifically, Gond et al. (2012) emphasise the limitation of the roles of MCS in terms of addressing the social and environmental issues faced by organisations in the recent business environment and incorporating the broader interests of a wide range of nonshareholder stakeholders. This study contributes to the MCS literature by providing empirical evidence regarding the moderating role of interactive and diagnostic use of controls (Simons, 1995) on the association between market drivers of sustainability and sustainability learning capabilities. The findings confirm prior theoretical arguments about the opposite role of the interactive and diagnostic uses of controls on strategy implementation (e.g., Henri, 2006; Wijethilake et al., 2018). However, the findings appear partly contradictory to prior studies that suggest that although MCS "...are not irrelevant, they do not play a transformative role in enabling deep-seated organisational change towards sustainability" (Narayanan & Boyce, 2019, p. 1).

6 | CONCLUSION

This study makes an original and substantial contribution to sustainability, organisational learning and SCS literature and managerial branch of stakeholder theory by responding to the call for research to examine the empirical link between market drivers of sustainability and organisations' learning towards sustainability (Amui et al., 2017; Schrettle et al., 2014) and whether MCS promote or hinder organisational learning (Batac & Carassus, 2009). By providing empirical evidence with regard to the association between market drivers of sustainability and sustainability learning capabilities, the findings are consistent with prior studies (e.g., Schrettle et al., 2014; Siebenhüner & Arnold, 2007) and also support the managerial branch of stakeholder theory (Deegan & Unerman, 2011).

This study extends the prior literature on MCS and organisational learning (Batac & Carassus, 2009; Kloot, 1997) by providing empirical evidence on the moderating role of interactive and diagnostic use of controls in the association between market drivers of sustainability and organisational learning. The findings show that the positive moderating effect of interactive use of SCS has an important role in adopting sustainability learning capabilities in proactive strategic responses to market drivers of sustainability. The negative moderating effect of diagnostic use of SCS reveals the importance of detecting errors, detecting deviances from preset targets and ensuring compliance with external standards/regulations. By providing empirical insights into the interactive and diagnostic use of controls, this study contributes to the MCS and SCS literature (e.g., Gond et al., 2012; Henri, 2006; Simons, 1995; Wijethilake et al., 2018). In doing so, this study contributes to the debate over the practical relevance and usefulness of management accounting research in responding to emerging societal trends.

6.1 | Implications for managers

Sustainability challenges experienced by contemporary business organisations create an excellent opportunity to examine the role of SCS in facilitating sustainability learning capabilities. Conceptual arguments and empirical evidence proposed in this study can assist managers to better understand the different uses of SCS in facilitating sustainability learning capabilities, instead of reactively complying with sustainability regulations or responding on an ad hoc basis. 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 the implementation process. Findings suggest that managers need to pay special attention to promoting interactive control systems to enable sustainability learning capabilities. Failure to do so may prevent

organisations from developing the learning capabilities that are necessary to adapt to sustainability changes in the market.

It should be noted that market drivers of sustainability are rapidly increasing because of the negative environmental impacts of organisations, new industry standards, regulations and strong stakeholders' demand for sustainable products and practices (Rivera-Camino, 2007; Schrettle et al., 2014; Siebenhüner & Arnold, 2007). Failure to address such concerns might result in long-term negative consequences. Organisations should understand the relevance and importance of choosing appropriate SCS in adopting sustainability learning capabilities in response to market drivers of sustainability. Further to that, the study guides managers not only on how to respond to external environmental pressures but also on the importance of developing internal sustainability capabilities. The findings in this study would be quite applicable to managers in the emerging economy context where organisational operations are likely to be influenced by emerging local and international sustainability market drivers. Accordingly, managers in this context can reflect on the changing market environment and stakeholders' demand for sustainable practices and embrace change as consisting of opportunities for strategic growth.

6.2 | Limitations and directions for future research

This study is subject to the inherent limitation of the cross-sectional survey method (e.g., no ability to probe answers, common method bias and measurement bias resulting from respondents' misunderstanding of the survey questions) although we followed Dillman (2000) to design the survey and used Harman's one factor test (Podsakoff et al., 2003) to ensure the absence of significant bias. Future studies can use a combination of mix of qualitative and quantitative methods or longitudinal case studies to address the limitation. Second, this study used only two controls of the LOC framework (interactive and diagnostic) and does not distinguish sustainability learning capabilities as single loop and double loop. Future researchers can further extend the potential role of SCS (including all four control systems—belief, boundary, interactive and diagnostic) in separate sustainability learning capabilities, such as single loop and double loop. Third, there is a need to examine the role of informal control systems in the implementation of sustainability capabilities. As each organisation approaches sustainability according to its unique context, not only formal controls (i.e., rules, standard operating procedures and/or budgeting systems) but informal control practices, such as organisational culture, might play an important role. 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 (Haugh & Talwar, 2010). Fourth, future studies may also extend the scope of this study with a quantitative analysis of different types of learning capabilities within organisations (e.g., top management, middle and lower levels) and between different industries (e.g., services and manufacturing or public and private sector). Finally, although we have taken several steps to ensure the absence of significant bias (e.g., pilot test of the questionnaire, nonresponse and common method bias), the findings are based on 175 survey responses. Therefore, caution should be exercised in terms of generalising the findings of this study to other country or context.

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