

SAMPJ
13,5

1082

Received 9 November 2021
Revised 14 April 2022
13 June 2022
15 June 2022
20 June 2022
30 June 2022
Accepted 10 July 2022

The means to substantive performance improvements – environmental management control systems in ISO 14001–certified SMEs

Leanne Johnstone
Örebro University School of Business, Örebro, Sweden

Abstract

Purpose – This study aims to address how the ISO 14001 standardisation and certification process improves substantive performance in small to medium-sized enterprises (SMEs) through the development of an environmental management control system (EMCS).

Design/methodology/approach – A qualitative cross-case interview design with those responsible for the implementation of an environmental management system (certified to ISO 14001) in SMEs is adopted to inductively “theorise” the EMCS.

Findings – The design and monitoring of environmental controls are often beyond the scope of the SMEs’ top management team and include extra-organisational dimensions such as the external audit and institutional requirements. This suggests more complex control pathways for SMEs to produce EMCS that primarily function as packages and are broader than the analytical level of the firm. Here, controlling for environmental performance exists at strategic and operational levels, as well as beyond the SMEs’ boundaries.

Practical implications – Various internal controls are put forward for SME owner-managers to meet environmental targets (e.g. gamification and interpersonal communication strategies). This builds upon a broader accountability perspective wherein formalised hierarchical control is only one route for ensuring sustainable action within the ISO 14001-certified SMEs.

Social implications – This study contributes to a more sustainable society through developing an understanding of how environmental sustainability is substantively managed by SMEs to improve performance for current and future generations.

Originality/value – This paper, to the best of the author’s knowledge, is one of the first to establish how SMEs control for environmental sustainability from empirically derived evidence. In doing so, it provides an example of the EMCS for the SME context.

Keywords Environmental management control system, Environmental management system, Environmental performance, ISO 14001, SMEs, Sustainability control

Paper type Research paper



© Leanne Johnstone. Published by Emerald Publishing Limited. This article is published under the Creative Commons Attribution (CC BY 4.0) licence. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this licence may be seen at <http://creativecommons.org/licences/by/4.0/legalcode>

The author is grateful for the detailed comments of Magnus Frostenson and Sabina du Rietz of Örebro University, as well as suggestions by Delphine Gibassier on earlier versions of this manuscript. The comments of two expert reviewers and the editor were furthermore significant in forming the manuscript into its current version.

1. Introduction

Sustainability control is a growing field which allows scholars to gain a better understanding of how organisations substantively improve their social and environmental performance (Wijethilake *et al.*, 2018; Johnstone, 2020). Sustainability control regards “all devices and systems that managers develop and use to formally and informally ensure that the behaviours and decisions of their employees are consistent with the organization’s sustainability objectives and strategies” (Crutzen *et al.*, 2016, p. 1293). Through control, organisations plan, monitor and account for strategic sustainability decisions daily. More specifically, the sustainability control system (SCS) – and its associated terms – is a collection of management accounting tools that managers use to direct, monitor and motivate employees to perform – in this case – sustainably (Wijethilake *et al.*, 2018; Guenther *et al.*, 2016).

Various control systems are discussed in the literature as strategic responses to the sustainability mandate. SCSs can be seen as the *means* [or internal mechanisms (Bebbington, 2007)] to operationalise external accountability demands in terms of concrete actions. Mainstream management control system (MCS) frameworks such as Simons’ (1995) levers of control (LOC) (Arjaliès and Mundy, 2013; Kerr *et al.*, 2015) or Malmi and Brown’s (2008) conceptual MCS package are often used to frame or explain SCS studies (Crutzen *et al.*, 2016; Baker *et al.*, 2018). Nevertheless, such studies tend to focus on specific controls or groups of controls (Crutzen *et al.*, 2016; Soderstrom *et al.*, 2017). As a response, there have been more pragmatic attempts, such as the sustainability balanced scorecard (SBSC) (de Villiers *et al.*, 2016; Sands *et al.*, 2016), to integrate social, environmental, and financial performance measures within organisations. Nevertheless, the strategic management approach to control system *design* emphasised through such systems downplays sustainability as something broader than the organisation (Guenther *et al.*, 2016) and the responsibility of all employees, not only top management (Johnstone, 2019).

SCS studies generally lack “theory” and there is more implicit debate on the importance of SCS as conceptual or theoretical frameworks in themselves. Indeed, contingency or stakeholder theories are used to address the question of *why* organisations *strategically adopt and design particular controls* within an institutional context (Qian *et al.*, 2011; Pondeville *et al.*, 2013). However, this fails to elaborate on *how* controls combine and are *used in practice* to substantively improve performance. Particularly, there is a general lack of understanding in terms of if and how SCSs function as packages of independent controls or as systems of interdependent ones necessary to produce particular performance outcomes (Grabner and Moers, 2013).

Additionally, the focus of sustainability control research is mostly on control system design in *larger* firms (Beusch *et al.*, 2022; Pondeville *et al.*, 2013; Riccaboni and Leone, 2010). As such, there is a general lack of understanding of SCSs in alternative organisational forms such as small to medium-sized enterprises (SMEs) (Ghosh *et al.*, 2019; Gibassier and Alcouffe, 2018; Pelz, 2019). Defined as companies with less than 250 employees and/or a turnover of $\leq$ €50m (European Union Commission, 2003/361/EC, 2003), SMEs constitute the biggest sector of society and thus contribute to most of its pollution (Kearins *et al.*, 2010). Further, SMEs have unique characteristics [e.g. structure, size and ownership, among others (Hillary, 2004; Stubblefield Loucks *et al.*, 2010)], which may affect their approach to SCS design (Kruis *et al.*, 2016; Lavia López and Hiebl, 2014). For example, some suggest that SMEs find the sustainability tools developed for larger firms difficult to adapt to their operations (Stubblefield Loucks *et al.*, 2010) and have less sophisticated, informal control systems in place (Moore and Spence, 2006; Kruis *et al.*, 2016). Meanwhile, others comment that the tools adopted within SMEs are similar to larger firms, although SMEs are less likely

to report their internal sustainability practices (Baumann-Pauly *et al.*, 2013). While these limited examples comment on the broad type (i.e. formal or informal) and nature (i.e. flexible or tight) of control, less is known about what this SCS looks like.

The role of certifiable reference standards (e.g. ISO 14001) in the development of sustainability controls in SMEs is an emerging stream of research. Some find that the implementation of a certifiable environmental management system (EMS) leads to increasingly standardised, documented and compliance-driven controls in SMEs, which are primarily formal and/or prescriptive in nature (Groen *et al.*, 2012; Johnstone, 2021). Framing EMS–SME research through control system frameworks is important for various reasons. First, it can help move beyond perceptions of environmental performance as a symbolic act tied to certification towards a deeper understanding of how and in what ways environmental performance is substantively managed and achieved in SMEs (Boiral and Henri, 2012). This can also be beneficial for SMEs in terms of understanding how EMS can be implemented in a more effective way. Finally, it can contribute to a broader discussion on conceptualising and theorising the SCS for the SME, as an understudied yet nevertheless important empirical context (Johnstone, 2020). Building on these gaps, this paper aims to know more about how SMEs control for sustainability by asking:

How does the ISO 14001 standardisation and certification process effect the development process of an environmental management control system (EMCS) in SMEs for substantive performance improvements, and what does this control system look like?

Through an interview study of 18 SME representatives, seven auditors and a consultant over a three-year period and in two rounds, this paper contributes to an understanding of the environmental facet of SCS [i.e. the environmental management control system (EMCS)] for the SME context. Such a research design helps theorise and/or conceptualise sustainability control patterns (i.e. the substantive changes implemented) by speaking to those responsible for EMS management (Crutzen *et al.*, 2016). It also allows for an “empirically derived” and “more complete” description of the control system which cannot be captured by extant MCS frameworks (Bedford and Malmi, 2015, p. 4). This is especially important for knowing more about the management processes and controls needed to ensure the translation of a sustainable strategy (in this case the adoption of ISO 14001 by SMEs) based on legitimacy or institutional factors into operational, performance outcomes.

This paper begins with a literature background that presents recent SCS research, before overviewing the characteristic type and nature of control in ISO 14001-certified SMEs. Here, the SCS is regarded as the “theoretical domain” guiding this study as it “refer[s] to a particular set of knowledge on a substantive topic area situated in a field” (Lukka and Vinnari, 2014, p. 1310). Meanwhile, overarching theories and perspectives are loosely related to illustrate points where necessary.

2. Literature background

2.1 *Developments in sustainability control system research*

Sustainability control studies, which elaborate on the internal mechanisms used within organisations to ensure external accountability demands are met, have been growing in recent years. This growth arguably stems from critiques on the ability of reporting and disclosure studies, prevalent in social and environmental accounting research, in addressing internal sustainable changes (Cho and Patten, 2013; Milne and Gray, 2013). It may also come down to the increasing adoption of international frameworks, guidelines and reference standards that require annual substantive performance improvements (Johnstone, 2021).

As an “emerging” field (Soderstrom *et al.*, 2017), sustainability control scholars often draw on extant MCS frameworks to frame or explain their studies (Arjalies and Mundy, 2013; Bouten and Hoozée, 2016). This can be viewed as limited because of the commensuration challenges when accounting for social and environmental phenomenon in pragmatic or functionalist ways within organisational boundaries (Narayanan and Boyce, 2019; Unerman and Chapman, 2014). Furthermore, sustainability control studies tend to focus on specific controls or groups of controls (Rodrigue *et al.*, 2013; Wijethilake and Upadhaya, 2020). While some argue this leads to “more pointed references” (Soderstrom *et al.*, 2017, p. 69), it also implies that SCSs often operate as a conceptual packages (Grabner and Moers, 2013), rather than a theoretical frameworks as traditional MCS frameworks, such as Simons’ (1995) LOC, would suggest. Finally, it remains unclear how sustainability is integrated into traditional MCS and if this is even necessary. While some view separate SCSs as good for more responsive sustainability solutions (Riccaboni and Leone, 2010), others imply that integration with MCS is necessary to ensure sustainability is a core strategic issue (Battaglia *et al.*, 2016; Gond *et al.*, 2012).

As previously implied, many sustainability control studies are orientated around the strategic level of system design in response to external pressures. This inadvertently asserts (top) managers as sustainability experts and sustainability as controllable within organisational boundaries. It also suggests that formalised and hierarchical controls are *the* means to make employees accountable for sustainability. However, the sustainability control literature is somewhat fragmented and piecemeal in its conceptualisations and theorisations of what this system looks like (Lueg and Radlach, 2016; Guenther *et al.*, 2016). Perhaps, this is down to the complexity of controlling for sustainability as a systems concept as well as because sustainability is often tied to individual beliefs systems and ethics, wherein employees feel responsible for the well-being of others. These factors may make “sustainability” difficult to capture in traditional MCS frameworks which are based on pragmatic approaches to system design as a strategic response to external accountability demands.

More recent sustainability control studies imply the need to know more about the operational level in terms of how controls are “made controlling” by the individuals enacting them (Ligonie, 2021, p. 2; Ghosh *et al.*, 2019). Johnstone (2019) asserts that it is a combination of individual and organisational belief systems that guide sustainable action within organisations. Through this, sustainability *management* (control) is suggested *as a practice*, not only the people formally designing the controls for subordinates to act upon (Sundin and Brown, 2017; Won Kim and Matsumura, 2017). This moves beyond the assertion in behavioural accounting studies that employees receive, interpret and act upon formalised managerial controls (Norris and O’Dwyer, 2004; Sundin and Brown, 2017), by incorporating a more critical perspective that indicates sustainability *controlling* as something broader than managerial decision-making and formalised system design.

To deal with the perceived inadequacies in applying mainstream functionalist MCS frameworks and pragmatic controls (Baker and Schaltegger, 2015; Narayanan and Boyce, 2019), the “outside” is increasingly being brought into SCS conceptualisations. Through their framework, Guenther *et al.* (2016) position the EMCS as the intermediary space that binds the strategic level of environmental planning with operations to improve performance (Christ and Burritt, 2013; Pondeville *et al.*, 2013) *within* a wider extra-organisational context (Johnstone, 2019). This framework explicitly connects the strategic decision to adopt an EMS such as ISO 14001 and the establishment of internal tools (i.e. the control system) to meet annual accreditation. Yet rather than theorising the control system by detailing control typologies and their interaction effects, the EMCS remains a black box that exists in the

space between strategy and operations (see [Figure 1](#)). The case-specific nature of the EMCS furthermore motivates the need for studies to establish systems from empirical evidence (cf. [Bedford and Malmi, 2015](#)), rather than through existing frameworks which may not fully capture the dynamics of sustainability control for different types of organisations as situated within their external contexts.

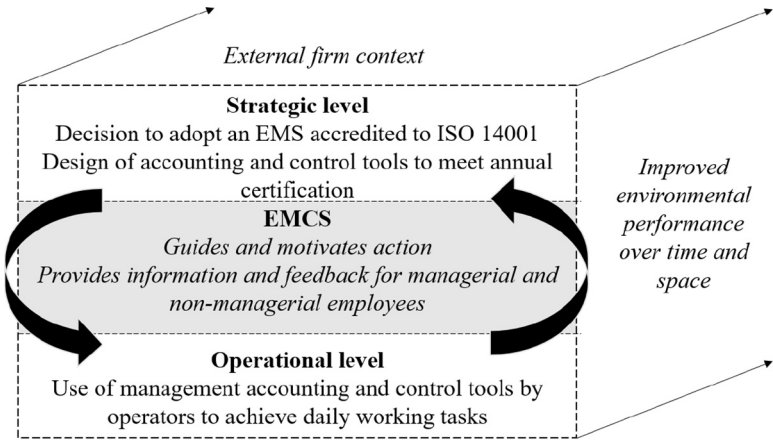


Figure 1.
Positioning the EMCS
through ISO 14001
adoption and
implementation

Source: adapted from Guenther *et al.* (2016)

2.2 Environmental control and ISO 14001-certified small to medium-sized enterprises

Certifiable standards associated with the implementation of an EMS, such as ISO 14001, are adopted by firms of all shapes and sizes for various symbolic and substantive performance reasons ([Johnstone and Hallberg, 2020](#)). While symbolic performance broadly regards corporate legitimacy ([Parker, 2005](#)), substantive performance regards the internal changes made to improve environmental processes and procedures within organisations ([Boiral and Henri, 2012](#)). Although both categories of performance are interrelated, symbolic adoption reasoning dominates EMS studies ([Ferrón-Vilchez, 2016](#); [Martin-de Castro *et al.*, 2017](#)). However, this focus on the “presentation of practices” ([Brunsson and Jacobsson, 2002](#)) at the firm-field interface fails to more explicitly address how organisations design internal controls to implement their certifiable EMS in a more substantive way.

As part of a broader supply chain, SMEs are not exempt from the standardisation and certification process ([Nawrocka, 2008](#)). SMEs are increasingly pressured by external stakeholders to adopt, implement and report a certifiable EMS to gain business and/or sustain operations ([Johnstone and Hallberg, 2020](#)). Nevertheless, the limited empirical studies on the implementation of EMS in SMEs focus on creating prescriptive models of what EMS implementation *should* look like, from a normative stance ([Balzarova and Castka, 2008](#); [White *et al.*, 2014](#)) based on some sort of uniformity of practice ([Darnall, 2009](#)). They also focus on discrete environmental outputs such as waste reduction or energy management ([Singh *et al.*, 2015](#); [Laskurain *et al.*, 2017](#)) and/or specific control tools such as targets ([Graafland and Smid, 2016](#)). Such foci, however, only partly explain the systemic internal changes needed and implemented by SMEs to more substantively improve environmental performance and thus fail to capture a comprehensive understanding of what the internal control system looks like.

While the decision to adopt an EMS can be considered a “strategic response of compliance” (Ahrens and Khalifa, 2015, p. 119) to wider institutional and stakeholder demands (Guenther *et al.*, 2016; Mazzi *et al.*, 2016), the previous discussion implies that the substantive, sustainable “management” of processes (i.e. the controlling) is iterative, involving both organisational and individual beliefs systems throughout the hierarchy. For SMEs, with shorter chains of command, this might imply that the conventional hierarchically designed control is only one route to ensure action and that more complex relational pathways are at play. This furthermore motivates the need for empirically derived configurations to capture more clearly what control systems look like for the SME context, in this case ISO 14001-certified SMEs.

ISO 14001 is the most popular reference standard for implementing an EMS on the market (Mazzi *et al.*, 2016; Boiral *et al.*, 2018). Nevertheless, the implementation of an EMS is by no means intended to produce homogenous results (Yin and Schmeidler, 2009) as some imply (Darnall, 2009). Specifically, the EMS connected to ISO 14001 should be tailored to the organisation (BS EN ISO 14001:2015).

Although the motives to adopt ISO 14001 relate to both symbolic (i.e. legitimacy) and/or substantive (i.e. process and performance efficiency) reasons (Boiral and Henri, 2012), the certification process ultimately aims to improve internal environmental procedures via an externally audited model of continuous improvement (BS EN ISO 14001:2015). Nevertheless, there is the assumption that ISO 14001 helps companies improve process controls (i.e. inputs in relation to operational performance), rather than outcome controls (i.e. environmental and/or financial performance) (Boiral and Henri, 2012). This suggests that the control focus through ISO 14001 implementation is on the *means* (i.e. improved processes and procedures), rather than the *ends* (i.e. improved environmental performance) (Bromley and Powell, 2012). Here, the means becomes the EMCS as the system implemented to improve environmental performance.

Within the EMS literature, there is some debate on the type (i.e. formal and/or informal) and nature (i.e. flexible and/or tight) of process controls needed to improve environmental performance.

On the one hand, some present controls for ISO 14001 as tied to regulation, compliance and the reduction of environmental impacts through the firm as part of a broader context (Deyassa, 2019). The focus is on discrete environmental performance indicators (EPIs), system documentation, training programmes, monitoring and measurement (Campos, 2012; Graafland and Smid, 2016); i.e. a traditional management control approach. Here, compliance is demonstrated via the traceable internal processes and procedures that result in performance evaluation as an output control (see ISO 14001: 2015; §9). While this approach may be necessary for some parts of the EMS, Halme *et al.* (2018) suggest that through formalised control, the “spirit of the management system” does not transcend organisational tiers.

On the other hand, the latest version of ISO 14001 views both managerial and non-managerial input into the design and development of process controls as necessary (BS EN ISO 14001: 2015; §7). Through its amended clauses, ISO 14001 therefore aims to embed the “spirit of the management system” throughout the organisation and the people within it. Johnstone (2021) furthers that the professional and moral input of non-managerial operators is vital for EMS success. Here, informal controls, in terms of open communication between organisational members sharing both problems and solutions (Laguir *et al.*, 2019), are important. Furthermore, this informal or flexible approach to control is not only increasingly called for in ISO 14001, but – as some argue – is characteristic in SMEs (Halme and Korpela, 2014) with their “less sophisticated” control systems (Kruis *et al.*, 2016).

Meanwhile, it may well be a combination of technical (e.g. performance measures and outputs) and socio-ideological or human (e.g. value systems, employee skills, awareness, etc.) aspects of

control that are necessary for substantive performance improvements (Johnstone, 2021; Witjes *et al.*, 2017).

Through control system design and development, organisations account for the demands and expectations of stakeholders in a more substantive way. Given the importance of SMEs for sustainable development, it is therefore of interest to open the black box of the EMCS for the SME context in terms of detailing the system's constellation and its potential interaction effects. This not only contributes to an understanding of the EMS implementation process beyond signalling legitimacy, but also to an elaboration on what SCS look like for the SME context and if/how this system functions as a system or a package in a more theoretical or conceptual sense.

3. Method

An inductive approach to theorising the development process (i.e. design and implementation) of controls in SMEs through the ISO 14001 standardisation and certification process is achieved through a qualitative cross-case research design, which – similar to previous studies in the area (Witjes *et al.*, 2017; Johnstone and Hallberg, 2020) – takes the SME as the context. An inductive approach allows “issues and theories to emerge [...] from the case] rather than being imposed on it” (Scapens, 1990, p. 274). Thus, it is useful for the purpose of this study given the critiques in using extant MCS frameworks for sustainability issues (Johnstone, 2019) and the need for empirically derived control systems (Bedford and Malmi, 2015).

The primary research method is semi-structured interviews between 2019 and 2021 with those responsible for the management, certification or standardisation process related to ISO 14001 in SMEs. The interviewees included the ISO 14001 responsible person in 18 SMEs (be it managers or non-managers), as well as seven ISO 14001 auditors and one consultant. This moves beyond quantitative research on the impact of ISO 14001 that narrowly focuses on managers' attitudes by offering a more rounded opinion on the ISO 14001 development process through an “outside-in” (auditors/consultant), “inside-out” (SME representatives) approach, which further helps triangulate the data (Mazzi *et al.*, 2016; Boiral *et al.*, 2018).

The SMEs in this study all satisfied the criteria of having less than 250 employees *or* a turnover of $\leq$ €50m (European Union Commission, 2003/361/EC, 2003). They also had to be certified to ISO 14001. Nevertheless, the SMEs that participated belong to the *small* (headcount of <50 and turnover of $\leq$ €10m) and *micro* (headcount < 10 and turnover of $\leq$ €2m) categories of the EU Commission definition. As the context for exploration is the SME, various SMEs were targeted in the United Kingdom, Sweden and Ireland because of access issues where the auditors functioned as intermediaries due to confidentiality agreements between the ISO auditors and their SME clients. This can be viewed as feasible given that SMEs tend to be similar in terms of size, ownership, structure, context, market-orientation as well as their attitudes towards environmental issues (Perez-Sanchez *et al.*, 2003; Stubblefield Loucks *et al.*, 2010), regardless of their country setting. Further still, no “in-group” differences between context (i.e. country or sector), length of accreditation or SME size were found through the analysis for the purpose of this research.

Together, 28 interviews were conducted by phone and in person in two rounds (see Table 1). These lasted on average 50 min each and were supplemented with document and email exchange between interviewees and the researcher, as well as website analysis when needed to better understand points that the SME representatives made in their interviews.

The first round of semi-structured interviews was designed with broad, open questions, operationalised around improving environmental performance and the specific processes and procedures needed to improve this performance (see Appendix). The themes of the

					Environmental management control systems
Code	Position	Main business	First interview round (2018–2019)	Second interview round (2021)	
Auditor A	Director, UK	Auditing	✓		1089
Auditor B	Director of Quality Assurance and Compliance, UK	Auditing	✓		
Auditor C	Quality Assurance Manager, UK	Auditing	✓		
Auditor D	Lead Auditor, UK	Auditing	✓		
Auditor E	Lead Auditor and Assessment Manager, Sweden	Auditing	✓	✓	
Auditor F	Auditor, UK	Auditing	✓		
Auditor G	Environment and Energy Principal Assessor, UK	Auditing	✓		
Consultancy A	Head Consultant, UK	Environmental consulting	✓		
SME 1	Compliance Manager, Ireland	Waste disposal	✓		
SME 2	Research Assistant, Ireland	Waste management	✓		
SME 3	Environmental Representative, Ireland	Port transport	✓		
SME 4	Environmental Manager, UK	Waste services	✓		
SME 5	Facility Manager, Ireland	Waste management	✓	✓	
SME 6	Management System Coordinator, UK	Construction	✓		
SME 7	Quality Manager, Sweden	Health care	✓		
SME 8	Traffic Manager, Sweden	Bus transport	✓		
SME 9	Managing Director, Sweden	Painting and decorating both residential and organisational interiors/exteriors	✓		
SME 10	CEO, Sweden	Brazing	✓		
SME 11	Environment and Quality Manager, Sweden	Signage	✓		
SME 12	Vice-CEO, Sweden	Plumbing and welding	✓		
SME 13	HR/Quality Manager, Sweden	Painting and decorating both residential and organisational interiors/exteriors	✓		
SME 14	Management System Coordinator, Sweden	Construction	✓		Table 1. Interview details
SME 15	Technical Director, Sweden	Construction	✓		
SME 16	Marketing Manager, Sweden	Solar energy	✓		
SME 17	Sustainable Business Development and Strategist, Sweden	Biofuel sales	✓		
SME 18	Technical Manager, Sweden	Transport	✓		

interview questions were loosely connected to [Guenther et al.'s \(2016\)](#) positioning framework in terms of the EMCS as the “black box” bridging strategy and operations which thus allowed the EMCS to emerge from the data. Deliberately keeping the themes broad furthermore allowed the respondents to answer as freely as possible in their own words ([Lindlof and Taylor, 2002](#)). Nevertheless, questions regarding the internal processes and procedures were broadly grouped around formal and informal controls based on the assumption that the introduction of an EMS incites both characteristic types of control in SMEs ([Johnstone, 2021](#)). For the first round of interviews, a level of saturation naturally occurred wherein additional interviews yielded nothing new for the purpose of this study. Meanwhile, the second round of interviews was less successful in contributing further knowledge to the EMCS development process. The intention of the second round of interviews in 2021 was to understand if/how the COVID 19 pandemic had affected the development of controls tied to ISO 14001 certification. Although, most SME participants noted “no time” as the reason for not participating in the second round of interviews.

The analytical procedure involved establishing the types of control that the SMEs designed and implemented to ensure continual substantive improvement. Together, these “types” of controls and/or control tools constitute the EMCS through integrating strategy and operations.

This first stage of the analytical procedure was to code the interview material into themes based on the interviewees’ responses, rather than using extant MCS frameworks as framing mechanisms. As such, categories “emerged” from the data ([Bryant and Charmaz, 2007](#), p. 175). The interviews of all participants (SME representatives, auditors and the consultant) were coded and two interrelated areas of control were initially found:

- (1) the audit as a meta-level control; and
- (2) targets as micro-level controls, with the latter constituting most of the findings.

Together, these primary themes (and their related sub-categories) informed the structure of Section 4 in this paper.

The next stage of the analysis looked in more detail into each cluster of control to note sub-categories and trends. While the audit theme itself indicated problems within the auditing process as a meta-level control, more detailed sub-categories emerged through secondary coding from the “target” cluster in terms of both *setting* and *reaching* targets. Within the setting targets group, two further sub-themes emerged, namely, institutional actors’ role in setting/controlling SME targets (ISO and non-ISO related) and the internal design problems in setting targets. Within the reaching targets group, three further sub-themes emerged, namely, planning and budgeting as formal controls, gamification tools and communication strategies, with the latter two were then broadly grouped as engagement strategies. This “reaching targets” group yielded most connection to previous MCS frameworks, a finding which is taken up and visualised through a model in Section 5.

While the above codes largely informed the structure of Section 4, a final step involved relating the findings from the coding back to the two-part research question guiding this study. This resulted in the production of two analytical summary figures that serve as the basis of Section 5, which connects the figures back to the prior literature. The first of these figures reviews the initial themes in terms of how the standardisation and certification process affected the development process of controls by linking the thematic findings from the interviews into the ISO 14001 annual improvement cycle. Meanwhile, the next figure more explicitly presents the EMCS for the ISO 14001-certified SMEs in this study by connecting the basic findings from the previous figure and consolidating them into the specific controls found. As such, this offers a first step in visualising what the EMCS looks like for the SMEs in this study.

Thus, Section 5 overall serves to inductively “theorise” the EMCS as well as relate the findings back to the literature.

4. Findings

ISO 14001 is “a framework that allows for the identification of opportunities within and outside the business, and essentially establishes the control and discipline process for evaluating those risks and opportunities” (Auditor C). Within this framework, two distinct themes are identified from the interviews which support decision-making and motivate employees, namely, the audit as a meta-level control and targets as micro-level controls.

4.1 Audit

To meet ISO 14001 certification, organisations must perform an internal audit (§9 ISO 14001: 2015). They are also subject to a secondary external audit by a third-party certification body to assess compliance. Together, the external and internal audits are the main evaluation tools mentioned by the SMEs to assess environmental processes and outcomes, thus helping the SMEs plan their future control measures.

The internal audit is intended to “pick up on things” such as risks and put “improvement teams in place” where necessary (SME 5). This is carried out before the external audit and requires staff to be trained in the audit process, even though this is often not part of their official job description. As such, it is viewed as something that people volunteer for, serving to “find out who is interested or not” in environmental management (SME 2).

Meanwhile, the external audit (based on two stages) is viewed as *the* main indicator of performance or compliance to ISO 14001. While Stage 1 regards a document review, Stage 2 is on site, and regards the actual implementation of an organisation’s EMS. It is the annual Stage 2 audit that is typically seen as the main control mechanism that “keeps the [environmental management] system alive” (Auditor E). This scrutiny of the internal system by an external party is deemed to evaluate the EMS’ effectiveness (SME 5) as a “fresh pair of eyes [...] providing] an outsider’s perspective” (SME 2) on the internal processes and procedures that require improvement. More than that, the external audit is also viewed as something that helps in the co-creation of value by encouraging employees to think outside the box as part of the environmental solution:

[First] you are auditing against the requirements of the standard, but on the other side, you are actually walking around with your eyes open [...] looking to see what is happening [...] looking to see why that pipe is leaking [...] why that tap is dripping [...] why that drum of oil is not protected. Sometimes for quality management systems [e.g. ISO 9001] it is literally just walking around looking at the paperwork, whereas – to me – the environment is much more tangible, you are doing something that makes a difference (Auditor G).

Alongside being a compliance instrument, the external audit has a symbolic purpose:

[It] demonstrates to customers and clients that you are holding yourself accountable and independently because you have got someone [the auditor] coming in. [...]. So, these standards [...] help satisfy customers as a whole – ‘ok, somebody is looking at them, somebody is assessing them and therefore, they are compliant’ (SME 1).

While generally viewed as something positive, some SMEs nevertheless suggest that the external audit is “piecemeal”, relying on auditor integrity:

I would expect more that the auditor would go and [...] see [...] what we are actually doing to reduce our harm on the environment. But, the auditor is more checking out the standard; that we

are fulfilling the standard. [...] I thought that we would go through the whole system [...] and not just scrape on the surface (SME 7).

There also remains some suspicion that SMEs manipulate figures to make their environmental performance look better than what is being achieved. Although auditors demand to see “evidence” regarding the goals and targets that the SME sets (SME 8), the associated feeling of “failure” may result in some SMEs making small adjustments to improve figures. Here, the external audit does not stop all symbolic presentations of practice (directly to the auditor and indirectly to stakeholders through the certification badge), and in some instances may not truly improve performance through its cycle of continuous improvement. To this end, Auditor G comments on the need for the external audit to be understood by SMEs as:

[...] not the end of the journey [of environmental management], but the start. [...] An assessor saying ‘congratulations, you have passed your audit, you can now have your certificate’ [...] All that is saying is that your system has reached the minimum criteria to start you out on the journey to start making improvements in your performance: ‘Get on with it and start making improvements now’.

4.2 Targets

The audit evaluates substantive environmental performance within the SMEs to guide further action through the development of lower level process controls. Notably, performance measurement and evaluation via target-setting are commonly discussed by the interviewees in terms of both the reasons behind target setting and the micro-level controls designed to meet targets. These targets are also used by auditors to assess the SME is “on-track” in its cycle of continual improvement.

4.2.1 Setting targets. Although output control targets are required by ISO 14001 each year (e.g. reduced emissions, recycling objectives), the targets themselves relate to the context of the SME and an assessment of environmental impacts needs to be identified, controlled and accounted for in the documented Environmental Policy (see §4, §5.2 and §6.2, [ISO 14001: 2015](#)). As a result, it is not only ISO 14001 that conditions the design and *use* of internal environmental targets but also the fact that the SMEs operate within a particular institutional or legislative context:

We have a landfill allowance scheme set out by the Department of the Environment that sets us ever-decreasing targets for reducing the amount of waste that goes to landfill (SME 2).

A national organisation monitors the usage of antibiotics [and] [...] know exactly how much we prescribe because they get a code from us (SME 7).

Beyond the general reasons for having targets, and the complex control pathways from field to firm and within the firm in terms of designating and controlling resources, various problems are recognised by the SMEs when designing targets.

To clarify the “jargon” of the standard, some SMEs make use of external consultants to “figure out what they are actually going to do” so as to not “focus on the wrong things or put a lot of energy into things that are not beneficial” (SME 7). Some auditors believe that SMEs opt “for more streamlined systems” because “they don’t have the time to really go into [the EMS] or make it more complicated” (Auditor E). Nevertheless, the use of standardised “off-the-shelf systems” goes against the essence of ISO 14001 in terms of tailoring the system to its context (§4 ISO 14001), as well as has implications for substantive change:

I hate going into businesses where it's clear that the consultant has come in with a system and just typed their [the firm's] name on the top of every page. It will get them through [the audit], but it is not going to do anything [...] it is not going to achieve anything, and it is not going to get continual improvement. [...] This is where I see a lot of smaller businesses struggling, and the businesses that say that they don't find it useful. If they have developed it [the EMS] themselves and understand what they are doing and why they are doing it, then that tends to have better results and it is a more effective system (Auditor G).

Setting targets yields other issues for the SMEs in terms of what is perceived to be required by them to pass the external audit. For example, various interviewees comment on reconciling the paradox between increased business and reducing environmental impacts. Others comment on the tension between cautious and optimistic target setting:

[A]ll of our targets are very realistic and they should be achievable. [However] we are running into trouble at the moment, because some of our targets are to do with fuel, and we are getting busier and busier [...] so obviously we are using more fuel and we have done various things [...] using various machines to try to reduce the fuel. But, it is not working (SME 3).

I've heard of some companies that set targets too high and then some of them are ridiculously low. I think they should set them high, there is no point going for low [...] you might as well as go for the best you can. If you don't achieve it, then you can always re-think [...] you know 'we have got to make improvements there'. Objectives aren't written in concrete [...] they don't have to achieve their objectives, but I think that they should go for the higher rather than the lower [targets] (Auditor F).

The ability to reconfigure targets throughout the year is embedded into the ISO 14001, even if not recognised by many SME representatives:

If the context has changed, then you have to update your information about the company. You have to start with the cycle again, with the new figures. For example, if your business has increased by 50% then you have to look at your objectives and you have to look at your procedures and correct them, so they follow the right track [...]. As long as I can see that they have worked with their previous objectives and they have worked to get new objectives, then they are fulfilling the requirements of the standard because there is an ongoing process, and they have a living and working management system (Auditor E).

This "living and working" EMS is about continuous improvement. However, a plateau effect is felt by some SMEs wherein environmental improvements are weighed against the cost of implementing change:

Everything else has already been done: We have lightbulbs, we have bins [...] we do everything by the book [...] so [...] there are no reasonable ways [to use electricity less] [...] Yes, I could buy in my own windmill, but it would cost too much [...] so I kind of get stuck. [...] It gets absurd when you don't really know what to do next (SME10).

While frustration is signalled because of the annual improvement cycle embedded into the standard, this "plateau" is a reality of business where the SMEs:

[...] are forced into a situation of maintaining their current performance. Our expectation is that they critically review what they do and that they look for opportunities; if they find them, then they do something about them. We don't expect them to do something that is economically not viable for them, we certainly don't expect them to do something that is technologically impossible for them (Auditor A).

Finally, the symbolic issue of target setting is again recognised as just a means to accreditation, rather than truly improving environmental *management* in a broader sense:

I was sick and tired of seeing objectives where people were reducing electricity by 1% and I would say to them well ‘what are you trying to do?’ And, they would say ‘what do you mean what are we trying to do?’ I would say to them ‘well, how do you make electricity?’ And, they would say, ‘well, I don’t know’. So, I would say, well maybe you should find out and I will come back again next year, and we can talk [...] Then I would come back next year and say to them ‘where do you get your electricity from?’ And they would say from ABC, ‘argh, okay, so it is neutral then’. And then I would say, ‘okay well if you are reducing electricity by 1% what is the environment actually gaining?’ And, then they would say ‘oh, I don’t know’ [laughs]. ‘Well, I’ll come back next year’ (Auditor D).

4.2.2 Reaching targets. Reaching targets regards employees (managerial and non-managerial) actually doing something to improve existing practices and performance and is therefore tied to individual responsibilities through control system design.

4.2.2.1 Planning and budgeting as formal controls. Planning and budgeting are considered as formal tools to make sure the SMEs improve their annual environmental performance. A few SMEs gave examples of the follow-up systems and procedures in place to ensure targets are on track and employees “act” to meet both short-term (i.e. tied to annual certification) and long-term (i.e. sustainability visions and strategies) goals. For example, SME 8 describes “yearly meetings with the bus drivers to talk about mileage, collisions, numbers and costs” alongside “five-year plans” which are followed up by the administration department to “see how far they have come and how to break down [the plans] into actions” for individual employees. Meanwhile, SME 7 divides periods to monitor resources and plan:

We took the whole of 2017 and then [...] split it into 12 months to see how much [of one product] we used [...] to see how much we need to order. [...] And those that were ordering, if they were sick, it would help the other person know what to order [...] they wouldn’t order a completely different product that we would have to send back because it was wrong (SME 7).

4.2.2.2 Gamification tools to engage employees. Various SMEs gave examples of “gamification strategies” which are designed to ensure targets are met by motivating individuals to perform. These strategies are not designed or tailored for each employee in terms of discrete tasks but tend to be broader in that they incentivise the way in which individuals and/or groups work through formalised reward systems. For example, various SMEs use computer programs to analyse the performance of their employees, which are then related to rewards such as higher salaries, trips abroad or team nights, some of which in fact counteract sustainability in a broader sense while meeting objectives of the standard. Meanwhile, others motivate individuals to perform in a more intrinsic or socialising sense:

If you focus on people who are doing a good job and promote them and give this information to the rest of the group, then the people who aren’t doing so well, they won’t want to be there because they want to be in the good group (SME 14).

4.2.2.3 Communication strategies to engage employees to perform. Other SMEs indicate that engaging SME employees (managerial and non-managerial) to meet targets regards more than formally designed gamification techniques, plans and budgets. Rather, a communicative approach is considered key in terms of making employees responsible for meeting targets as emphasised through ISO 14001 clauses (namely, §5 and 7), because managing the EMS is:

[...] not just one person’s responsibility, but a collective responsibility [...] demonstrating that it [environmental management] is not just something added on to the side of the business, you have got to be able to take a slice in the business anywhere and see that environmental strand running right through (Auditor G).

The SME employees in this study are often engaged through interpersonal, informal communication channels, which are deemed easier to implement in the SMEs (SME 11). The aim of these “conversations” is to develop environmental awareness and competence as conditions of the standard (§7, [ISO 14001: 2015](#)):

It is all about values, sitting and talking with the employees regarding the way of working at this company. It is hard to get a plus every year in terms of economic aspects, so the employees are very careful when they are using anything at all, they are using everything they can and using it again (SME 10).

Employee engagement also regards making information transparent in terms of what past actions have achieved and what this means for environmental sustainability beyond the SME's boundaries:

We have our policies and manuals for them about how to do their job, and [...] every second year, I do a sort of tour around the company [...] I try to keep it short, to educate them in environmental work. But, then also, we try to get them to calculate the right amount from the start, not over-ordering. [...] In 2016, we had a pretty horrific amount of waste [...] so we made a big issue out of that, and we showed all the numbers for it and showed what it could mean environmentally, and worldwide, tried to put it in a bigger perspective (SME 13).

Nevertheless, this information must be easy to understand by lower level employees to motivate a change in operational behaviour, even if motivations to perform actually go against the broader sustainability discourse:

At the same time, it is painters that we deal with. Some of them are not even high-school graduates [...] so we try to also break it down into what it would mean for them – ‘if you actually use up these last four litres of paint that you have thrown away, if all of us did that, we could actually go on a two-week trip next winter’ (SME 13).

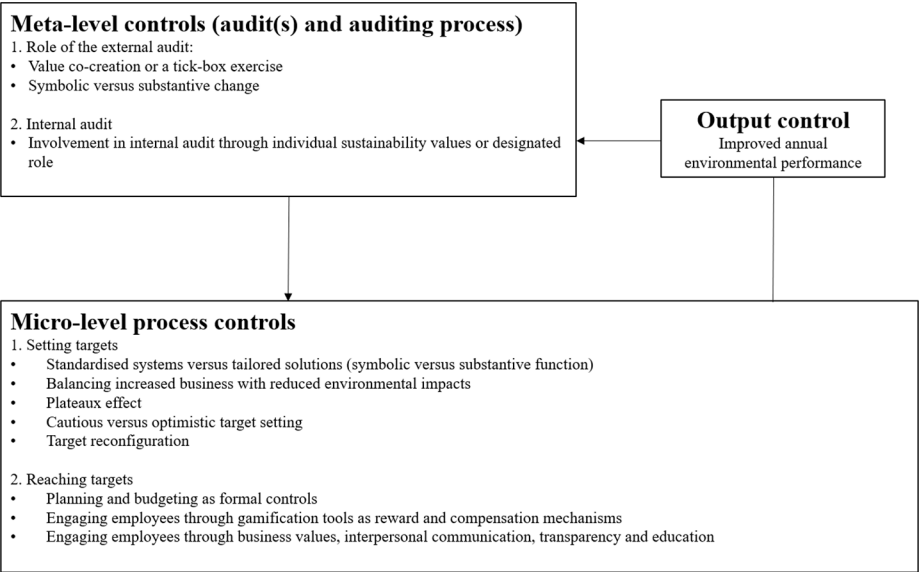
5. Discussion

5.1 ISO 14001 certification and standardisation and the development process of controls in small to medium sized enterprises

[Figure 2](#) connects the thematic discussion areas from Section 4 in terms of how the ISO 14001 standardisation and certification process affects the development of controls in SMEs, based on a cycle of continual improvement. This is further elaborated on in the discussion that follows.

The findings of this research suggest a more complex interaction between the characteristic type, nature and use of controls for the SME context that embrace extra-organisational “control” factors as recent conceptual SCS studies suggest ([Guenther et al., 2016](#); [Johnstone, 2019](#)). Particularly, the annual external audit appears to drive the internal (re)design of internal processes and procedures as some sort of *meta-level control* that guides the internal development of micro-level controls. This means that control(ling) for environmental management is not purely an intra-organisational phenomenon as so commonly asserted in the extant MCS frameworks that are adopted in sustainability control studies. While the role of the external audit in driving internal process controls is not something new ([Ahrens and Khalifa, 2015](#)), the findings reveal the external audit as a control from two positions in that it addresses both *the means* (i.e. internal operational improvements or operational controls) and *the ends* (i.e. official certification or performance outcome controls). This means that the external audit addresses both process (setting and meeting targets) and outcome controls (improved environmental performance) for the SMEs

Figure 2.
Thematic summary
of the findings in
terms of the ISO
14001
standardisation and
certification process
in SMEs



in this study. Nevertheless, the findings point to some degree of symbolism through the audit in addition to initiating substantive change as a control.

On the one hand, the external audit signals a *value creation process* within SMEs for further performance improvements by providing a “fresh pair of eyes”, which both scrutinise and contribute to the EMS and its development. It is proposed as a start-point, rather than an end-point to signal the following course of actions (i.e. micro-level controls) to be taken over the following year.

On the other hand, the audit functions as a *tick-box exercise and/or partial* because of its periodic, planned nature, wherein the auditor may focus on environmental aspects not deemed relevant by the SMEs. Particularly, the Stage 2 audit is suggested as a snapshot of SME operations. It is also viewed as highly subjective based on the professional practices of the particular ISO 14001 auditor who is assessing the management system and what he/she deems relevant. The credibility of the external audit is furthermore called into question by implying that some auditors have their own agenda through ISO 14001 certification to gain or maintain business in an increasingly competitive sector, rather than assessing how the SMEs are working with the EMS in a more substantive way.

Such contrasting positions indicate a means-end decoupling in terms of the audit and the auditing process. While the means signals its use value in substantively improving performance, the ends signals a symbolic approach by not only the SMEs adopting the management system but the professional practices of the auditor who may simply want the business. This therefore questions whether the external audit does substantively improve performance and can be considered a “real” control (Ahrens and Khalifa, 2015) or rather serves to present an external image of the SME as a symbolic accountability function (Arimura et al., 2016; Power, 1997).

In contrast, the internal audit appears to function as the “means” to substantively control and improve performance within the SMEs, rather than an “ends”. Involvement in this process relies on “volunteers”. While *who* conducts the internal audit and *why* are not the

focus of this study, participation in the internal audit may be the result of both structural [i.e. assigned roles and work tasks to be part of the audit and/or personal interpersonal desire to be part of the auditing process through sharing problems and solutions (Johnstone, 2021)] factors.

Beyond the audits, setting and reaching targets are important process controls for meeting the annual improved performance outcomes necessary for ISO 14001 certification (§6 and 8, ISO 14001: 2015). Nevertheless, the findings suggest that ISO 14001 accreditation is not the only reason why some SMEs have environmental targets and that other contextual explanations have a role in terms of control system design (e.g. national allowances on landfill). Additionally, there is concern over whether targets truly help the SMEs meet their operational aims or also have a more symbolic function.

Particularly, the legacy of conventional auditing practices and standards as compliance driven has resulted in the application of standardised “off the shelf systems” by some SMEs to symbolically meet performance, rather than truly embedding substantive change that is tailored to the SME and a condition of ISO 14001. Building on Yin and Schmeidler (2009), this means that some SMEs in this study do not fully recognise the role of EMS in producing heterogenous results, but rather assume that the standardisation and certification process requires some sort of uniformity in practice (cf. Darnall, 2009). Moreover, there is a lack of understanding in terms of how targets should be set to reflect current operations. It appears difficult for some of the SMEs to reconcile increased business with a reduced environmental impact. For others, the confusion regards resource constraints in terms of how to improve performance without adversely impacting finances. There is also ambiguity over how best to set targets in terms of being cautious or optimistic in the short term (i.e. through the ISO 14001 annual improvement cycle) and some even comment on a plateau effect where no further changes can be made without substantial resource investments. Thus, the role of the target setting, in terms of how to do it and in what ways, appears confused and/or misguided by many SMEs in this study and the ability to reconfigure targets is largely ignored. This finding relates to the difficulty by the SMEs in interpreting ISO 14001, which is still considered jargon bound and difficult to understand, even after its recent revisions in 2015 (Johnstone, 2021). This, consequently, could affect the ability of SMEs to substantively and accurately improve environmental performance on an annual basis.

Meanwhile, the strategies for reaching targets more clearly relate to a conventional sustainability control approach as controls are designed to ensure behaviour by making employees accountable for action (Crutzen *et al.*, 2016). Particularly, the findings suggest that reaching environmental targets is achieved through a combination of formal and informal controls, such as budgets, planning systems and follow-up procedures. This formalised approach to control is supplemented with other, more nuanced strategies that are both formal and informal.

First, gamification tools are reward and compensation strategies designed by the SMEs in this study to motivate their employees to perform better in daily working tasks. They have the intended effect of making targets understandable and/or relatable to individual employees at the operational level in the SMEs through building on extrinsic and/or intrinsic motivations. This contrasts previous research which suggests that target-setting can hinder the intrinsic motivation of employees towards meeting environmental objectives (Virtanen *et al.*, 2013), whilst building upon recent sustainability control research that suggests intrinsic factors are increasingly important for system success (Grubnic *et al.*, 2015; Johnstone, 2021).

Second, employees are engaged to meet targets through communicative controls that build awareness of the EMS. Here, there is an apparent attempt to integrate sustainability

throughout the organisational tiers. For example, education programmes and policies are considered important for reconciling individual values with organisational ones in terms of environmental management in the SMEs. But, more than that, engaging employees through interpersonal communication channels are also important for establishing a “shared vision” of how best to reach targets. This builds upon previous control research that recognises employees (at different organisational levels) as co-creators of knowledge and active “knowledge transformation devices” (Goretzki *et al.*, 2017) to induce sustainable change (Johnstone, 2019; Sundin and Brown, 2017). This is especially important given that the latest version of ISO 14001 requires employee involvement in the EMS as prerequisite to achieving certification (ISO 14001: 2015; §7), as well as for the SMEs in this study with their low headcount and flatter organisational structures, where everyone has a role to play.

5.2 Environmental management control system in ISO 14001-certified small to medium-sized enterprises

The previous discussion generally contrasts the assumption that SMEs exhibit a characteristically informal approach to control (Moore and Spence, 2006; Stubblefield Loucks *et al.*, 2010), by suggesting more complex interactions between formal and informal process controls to meet ISO 14001 certification for the SMEs in this study. However, it fails to detail what this control system looks like for the SMEs in terms of the constellation and interaction of controls. This is taken up in the following which addresses the second part of the research question guiding this study.

At the very basic level, the findings suggest that the ISO 14001 certification process presents control as existing within both strategic (i.e. the internal auditing process and designing/setting targets) and operational levels (i.e. reaching targets related to environmental performance). Additionally, through the external audit/auditors and legislative requirements (e.g. landfill allowance and antibiotic use), control also exists outside the SMEs’ borders. While these findings reinforce the idea that control bridges strategic and operations (Guenther *et al.*, 2016), they furthermore extend the *locus* of control to beyond the organisational boundaries. This empirical finding is relatively novel for SCS frameworks that are inherently intra-organisational, based on mainstream MCS frameworks (Arjaliès and Mundy, 2013; Rodrigue *et al.*, 2013). More explicitly, incorporating such external aspects of control into SCS frameworks arguably reduces the need for incorporating broader method theories to further explain system design (Qian *et al.*, 2011; Pondeville *et al.*, 2013, among others). This is additionally necessary because the monitoring of, for example, antibiotic use indicated by an SME in this study means that extra-organisational factors are not only important for system design, but also for monitoring and evaluating the “use” of resources. This further implies that “controls” not only exist within different organisational levels (Bouten and Hoozée, 2016) but that sustainability control(ling) is a process which is broader than the firm and cannot be resigned to intra-organisational management control system frameworks and conceptualisations (Johnstone, 2019).

Beyond the meta-level of extra-organisational controls, the findings furthermore address the debate over whether – or in what instances – control systems function as systems in a more theoretical sense or packages in a conceptual one (Grabner and Moers, 2013). This study points to some “traditional” control clusters to meet annual performance, rather than the EMCS being a system of interdependent controls (Grabner and Moers, 2013) that can be transferred to each and every SME context. Thus, the EMCS functions as a package *within* the SMEs’ boundaries, which is dynamic and flexible in terms of the specific types of control strategies adopted to ensure environmental performance is achieved. This suggests that the empirically derived framework in the SMEs in this study functions as a conceptual one,

rather than a theoretical one that frameworks such as [Simons' \(1995\)](#) LOC would imply. This means that while certain types or clusters of control are common for the SMEs in this study, the specific details of what the micro-level controls look like within each cluster for each SME cannot be resigned to off-the-shelf systems and prescriptive models from a more normative stance as previous EMS-SME research suggests ([Balzarova and Castka, 2008](#); [White *et al.*, 2014](#)).

Regarding what the internal aspects of this control system look like in relation to prior literature, the SMEs tend to use planning and cybernetic controls together to reach targets, and cultural and administrative controls to communicate the word of the standard and ensure action (i.e. align organisational strategy with individual employee values and experiences). However, each SME designs different micro-level controls within each overarching cluster. Interestingly, gamification is highlighted as a commonly adopted reward and compensation strategy for the SMEs in this study. This finding contributes to a limited understanding in sustainability control research on rewards for sustainability ([Crutzen *et al.*, 2016](#); [Soderstrom *et al.*, 2017](#)) and a broader discussion on whether rewarding sustainability goes against the altruistic foundations of sustainability as a discourse. Although, it remains unclear whether this strategy of rewarding sustainable behaviour is more commonly adopted in SMEs because of their small size to ensure employees act sustainability as a team in comparison to larger firms which may use other control strategies throughout organisational levels.

As an overview, [Figure 3](#) presents the inductively derived EMCS for the ISO 14001-certified SMEs in this study. It contains both external and internal controls that interact to produce particular performance effects on an annual basis. Thus, it builds on recent definitions of SCS as more than managerially designed systems and entailing a more complex accountability relationship where the management of sustainable practices is equally important ([Johnstone, 2019](#)) and that the control(*ling*) exists not only at managerial and operational levels ([Bouten and Hoozée, 2016](#); [Ligonie, 2021](#)) but also in external actors and institutions for the SMEs in this study. Here, the *locus* of control is both external and internal.

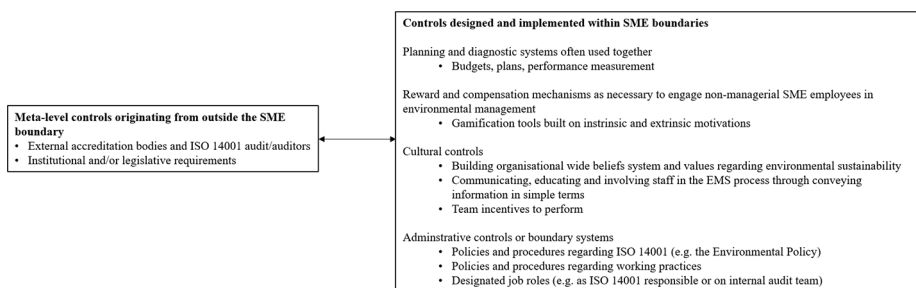


Figure 3.
Environmental
management control
system in ISO 14001-
certified SMEs

6. Conclusion

This paper was motivated by the need to know more about how SMEs control for sustainability ([Ghosh *et al.*, 2019](#); [Pelz, 2019](#); [Johnstone, 2020](#)). It finds that through ISO 14001 standardisation and certification, the development process of an EMCS generally leads to substantive annual environmental performance improvements for SMEs in terms of the design and implementation of micro-level process controls. Nevertheless, extra-organisational meta-level controls (such as the external audit and legislative factors) can

also be regarded as part of the control system framework as they condition the design, use and monitoring of internal process controls. This is novel for the sustainability stream as it inductively presents the control system as not purely an intra-organisational phenomenon and suggests the need to move beyond extant MCS frameworks to frame or explain sustainability issues. Here, the control system and controlling for sustainability are processual at both strategic and organisational levels, as well as broader than the analytical level of the firm. Through this, the external context of sustainability is brought into managerially grounded control system frameworks. Additionally, while the external and internal levels of the EMCS for ISO 14001-certified SMEs in this case indeed interact, the combination of controls is not interdependent in that they can be applied to varying degrees and in different combinations.

6.1 Implications

Regarding the theoretical implications, this study largely confirms the somewhat implicit assertions in the sustainability control literature, through its focus on specific controls (Soderstrom *et al.*, 2017), that SCSs largely function as conceptual packages (Malmi and Brown, 2008), rather than theoretical frameworks or systems (Simons, 1995). Through offering thematic categories of control rather than the specific, interacting controls, this finding also contributes to the heterogenous nature of EMS implementation that requires tailor made solutions (Yin and Schmeidler, 2009).

Beyond this, the more detailed findings contribute to the limited understanding of reward and compensation mechanisms for sustainability control [Bouten and Hoozée (2016) being an exception]. This study offers empirical examples of formal reward and compensation controls which are used by the SMEs to motivate employees to perform. While gamification is increasingly adopted in the wider business field (Zimmerling *et al.*, 2018; Robson *et al.*, 2016), it is rarely applied in sustainability control and is a key contribution of this research. Interestingly, the findings suggest that *directly* connecting environmental performance to rewards is *necessary* for the SME employees throughout the hierarchy in a way that is accessible for them. What this means is that rewards must be made explicit and relatable to employees (e.g. in terms of team nights and prizes, among others) and not only reserved for managers who are rewarded in bonus schemes tied to traditional financial objectives (Kolk and Perego, 2014). However, interestingly, there remains a paradox in the sense that some of these rewards for improving environmental performance within the SMEs are communicated to lower level employees in a way that goes against the wider sustainability agenda (e.g. holidays abroad).

This study also expands discussions on the symbolic and/or substantive nature of ISO 14001 standards (Boiral and Henri, 2012) by illustrating an array of symbolic and substantive effects which interact to improve environmental performance. Rather than suggesting some sort of means–ends decoupling (i.e. process versus outcome controls) through ISO 14001 certification, the findings suggest that the ISO 14001 standardisation and certification process induces real substantive change in addition to being a condition of business (Johnstone and Hallberg, 2020). Notably, it appears that the ISO 14001 standardisation and certification process can help create internal accountability for sustainability within SMEs throughout the tiers. This moves beyond assuming accountability in terms of the symbolism of the standard as a corporate badge by suggesting that the adoption and implementation of a reference standard such as ISO 14001 will actually improve operational performance in a more substantive sense. It also contributes by suggesting that control(ling) – or sustainability management as practice – resides in different organisational levels (Bouten and Hoozée, 2016; Johnstone, 2019), as well as exists beyond organisational boundaries.

Finally, this study contributes by suggesting the need for control strategies tailored to the SME context that go beyond setting targets in a more functional sense that assumes subordinates receive and act upon controls in a standardised or homogenous way. This “communicative” aspect builds upon a broader socialising accountability perspective (Roberts, 1991) wherein dialogue or conversations between managers and employees in SMEs are essential for ensuring sustainable accounts are produced. This means that control within SMEs is not only hierarchically constructed through formalised controls, but also socially embedded in relationships therein. This further illustrates the need to allow control system frameworks to inductively emerge through findings (cf. Bedford and Malmi, 2015), for not only the SME context but beyond, to help clarify what drives action within organisations beyond the prevalent research focus in the control literature on hierarchically imposed controls. This is because the findings of this study point to more complex and multifaceted control pathways that cannot adequately be captured through extant control system frameworks and functionalist approaches to control (for sustainability).

For SME practitioners, the findings of this study suggest the need to bridge informal and formal elements of control to ensure employees are on board with the environmental management process. Of particular relevance is the need to convey information on environmental management in a way that is understandable to daily operators further down the hierarchy. The study suggests the need for SMEs to use clear strategies to engage operators in environmental management. The findings may also help clarify some common misconceptions of the ISO 14001 standardisation and certification process for not only SMEs but other organisational forms (e.g. the ability to reconfigure targets and reduced need for documentation). Finally, it may encourage other SMEs to adopt a certifiable reference standard such as ISO 14001 to improve both symbolic and substantive performance.

6.2 Limitations and future research directions

This study is one of the first to explicate what the SCS looks like in SMEs, although it is not without its limitations.

Given that the focus has been on the ISO 14001 standardisation and certification process in SMEs (particularly small and micro enterprises), the results cannot be generalised. As such, it may be of interest to establish if and how the development process of environmental controls differs in SMEs that do not have a certifiable reference standard such as ISO 14001 in place. It may also be of interest to try and compare SMEs of different sizes and/or do longitudinal studies to gain a better sense how and if the approach to control differs as SMEs grow. Such research avenues would allow us to see how different constellations of control function as packages or systems in SMEs, as well as provide the way forward for some more generalisable results in terms of what SCSs look like in SMEs. Additionally, elaborating on this would allow sustainability control scholars to engage with the broader debate as to whether SCSs can be regarded as a theoretical or conceptual frameworks in different organisational forms and empirical contexts. It may also be of interest to further address why sustainability remains decoupled from core strategy in the SME context (i.e. through assignment key ISO 14001 personnel) given their unique features such as shorter chains of command and flatter structures.

Beyond the SME context, it is also of interest to know more about the relationship between the extra- and intra-organisational dimensions of sustainability control as part of SCS frameworks. Regarding process controls, it would also be of interest to know more about how other organisational forms engage employees to reach targets, as well as if/how gamification functions as a management control tool and how employees are made accountable for sustainable performance beyond formalised control systems. More

specifically, it is of interest to elaborate more on if reward and compensations are (more) necessary for SMEs to meet social and environmental aims in contrast to larger organisations which may have (more) formalised control and disciplinary structures for not meeting targets. These latter points are especially interesting given the limited attention to reward and compensation mechanisms in the extant sustainability control studies (cf. [Soderstrom et al., 2017](#)) as well as the assumption through control that accountability is primarily created through structural or hierarchical means.

References

- Ahrens, T. and Khalifa, R. (2015), "The impact of regulation on management control: compliance as a strategic response to institutional logics of university accreditation", *Qualitative Research in Accounting and Management*, Vol. 12 No. 2, pp. 106-126, doi: [10.1016/j.aos.2011.02.002](#).
- Arimura, T.H., Darnall, N., Ganguli, R. and Katayama, H. (2016), "The effect of ISO 14001 on environmental performance: resolving equivocal findings", *Journal of Environmental Management*, Vol. 166, pp. 556-566, doi: [10.1016/j.jenvman.2015.10.032](#).
- Arjaliès, D.L. and Mundy, J. (2013), "The use of management control systems to manage CSR strategy: a levers of control perspective", *Management Accounting Research*, Vol. 24 No. 4, pp. 284-300, doi: [10.1016/j.mar.2013.06.003](#).
- Baker, M. and Schaltegger, S. (2015), "Pragmatism and new directions in social and environmental accountability research", *Accounting, Auditing and Accountability Journal*, Vol. 28 No. 2, pp. 263-294, doi: [10.1108/AAAJ-08-2012-01079](#).
- Baker, C.R., Cohanier, B. and Gibassier, D. (2018), "Environmental management controls at Michelin – how do they link to sustainability?", *Social and Environmental Accountability Journal*, Vol. 38 No. 1, pp. 75-96, doi: [10.1080/0969160X.2018.1438300](#).
- Balzarova, M.A. and Castka, P. (2008), "Underlying mechanisms in the maintenance of ISO14001 environmental management system", *Journal of Cleaner Production*, Vol. 16 No. 18, pp. 1949-1957, doi: [10.1016/j.jclepro.2008.01.007](#).
- Battaglia, M., Passetti, E., Bianchi, L. and Frey, M. (2016), "Managing for integration: a longitudinal analysis of management control for sustainability", *Journal of Cleaner Production*, Vol. 136, pp. 213-225, doi: [10.1016/j.jclepro.2016.01.108](#).
- Baumann-Pauly, D., Wickert, C., Spence, L.J. and Scherer, A.G. (2013), "Organizing corporate social responsibility in small and large firms: size matters", *Journal of Business Ethics*, Vol. 115 No. 4, pp. 693-705, doi: [10.1007/s10551-013-1827-7](#).
- Bebbington, J. (2007), *Accounting for Sustainable Development Performance*, Elsevier, Burlington.
- Bedford, D.S. and Malmi, T. (2015), "Configurations of control: an exploratory analysis", *Management Accounting Research*, Vol. 27, pp. 2-26, doi: [10.1016/j.mar.2015.04.002](#).
- Beusch, P., Frisk, J.E., Rosén, M. and Dilla, W. (2022), "Management control for sustainability: towards integrated systems", *Management Accounting Research*, Vol. 54, p. 100777, doi: [10.1016/j.mar.2021.100777](#).
- Boiral, O. and Henri, J.F. (2012), "Modelling the impact of ISO 14001 on environmental performance: a comparative approach", *Journal of Environmental Management*, Vol. 99, pp. 84-97, doi: [10.1016/j.jenvman.2012.01.007](#).
- Boiral, O., Guillaumie, L., Heras-Saizarbitoria, I. and Tayo Tene, C.V. (2018), "Adoption and outcomes of ISO 14001: a systematic review", *International Journal of Management Reviews*, Vol. 20 No. 2, pp. 411-432, doi: [10.1111/ijmr.12139](#).
- Bouten, L. and Hoozée, S. (2016), "Let's do it safely: how altrad balliauw configured a package of control systems", *Journal of Cleaner Production*, Vol. 136, pp. 172-180, doi: [10.1016/j.jclepro.2016.01.105](#).

-
- Bromley, P. and Powell, W.W. (2012), "From smoke and mirrors to walking the talk: decoupling in the contemporary world", *Academy of Management Annals*, Vol. 6 No. 1, pp. 483-530, doi: [10.5465/19416520.2012.684462](https://doi.org/10.5465/19416520.2012.684462).
- Brunsson, N. and Jacobsson, B. (2002), *A World of Standards*, Oxford University Press, Oxford, England.
- Bryant, A. and Charmaz, K. (Eds) (2007), *The Sage Handbook of Grounded Theory*, Sage, London.
- Campos, L.M. (2012), "Environmental management systems (EMS) for small companies: a study in Southern Brazil", *Journal of Cleaner Production*, Vol. 32, pp. 141-148, doi: [10.1016/j.jclepro.2012.03.029](https://doi.org/10.1016/j.jclepro.2012.03.029).
- Cho, C.H. and Patten, D.M. (2013), "Green accounting: reflections from a CSR and environmental disclosure perspective", *Critical Perspectives on Accounting*, Vol. 24 No. 6, pp. 443-447, doi: [10.1016/j.cpa.2013.04.003](https://doi.org/10.1016/j.cpa.2013.04.003).
- Christ, K.L. and Burritt, R.L. (2013), "Environmental management accounting: the significance of contingent variables for adoption", *Journal of Cleaner Production*, Vol. 41, pp. 163-173, doi: [10.1016/j.jclepro.2012.10.007](https://doi.org/10.1016/j.jclepro.2012.10.007).
- Crutzen, N., Zvezdov, D. and Schaltegger, S. (2016), "Sustainability and management control: exploring and theorizing control patterns in large European firms", *Journal of Cleaner Production*, Vol. 143, pp. 1291-1301, doi: [10.1016/j.jclepro.2016.11.135](https://doi.org/10.1016/j.jclepro.2016.11.135).
- Darnall, N., Seol, I. and Sarkis, J. (2009), "Perceived stakeholder influences and organizations' use of environmental audits", *Accounting, Organizations and Society*, Vol. 34 No. 2, pp. 170-187, doi: [10.1016/j.aos.2008.07.002](https://doi.org/10.1016/j.aos.2008.07.002).
- de Villiers, C., Rouse, P. and Kerr, J. (2016), "A new conceptual model of influences driving sustainability based on case evidence of the integration of corporate sustainability management control and reporting", *Journal of Cleaner Production*, Vol. 136, pp. 78-85, doi: [10.1016/j.jclepro.2016.01.107](https://doi.org/10.1016/j.jclepro.2016.01.107).
- Deyassa, K.G. (2019), "The effectiveness of ISO 14001 and environmental management system-the case of Norwegian firms", *Structure and Environment*, Vol. 11 No. 1, doi: [10.30540/sae-2019-006](https://doi.org/10.30540/sae-2019-006).
- European Union Commission. 2003/361/EC (2003), "Commission recommendation of 6 may 2003 concerning the definition of micro, small and medium-sized enterprises", *Official Journal of the European Union*, Vol. 46, pp. 36-41.
- Ferrón-Vílchez, V. (2016), "Does symbolism benefit environmental and business performance in the adoption of ISO 14001?", *Journal of Environmental Management*, Vol. 183, pp. 882-894, doi: [10.1016/j.jenvman.2016.09.047](https://doi.org/10.1016/j.jenvman.2016.09.047).
- Ghosh, B., Herzig, C. and Mangena, M. (2019), "Controlling for sustainability strategies: findings from research and directions for the future", *Journal of Management Control*, Vol. 30 No. 1, pp. 5-24, doi: [10.1007/s00187-019-00279-8](https://doi.org/10.1007/s00187-019-00279-8).
- Gibassier, D. and Alcouffe, S. (2018), "Environmental management accounting: the missing link to sustainability?", *Social and Environmental Accountability Journal*, Vol. 38 No. 1, pp. 1-18, doi: [10.1080/0969160X.2018.1437057](https://doi.org/10.1080/0969160X.2018.1437057).
- Gond, J.P., Grubnic, S., Herzig, C. and Moon, J. (2012), "Configuring management control systems: theorizing the integration of strategy and sustainability", *Management Accounting Research*, Vol. 23 No. 3, pp. 205-223, doi: [10.1016/j.mar.2012.06.003](https://doi.org/10.1016/j.mar.2012.06.003).
- Goretzki, L., Strauss, E. and Wiegmann, L. (2017), "Exploring the roles of vernacular accounting systems in the development of 'enabling' global accounting and control systems", *Contemporary Accounting Research*, Vol. 35, p. 1888, doi: [10.1111/1911-3846.12357](https://doi.org/10.1111/1911-3846.12357).
- Graafland, J. and Smid, H. (2016), "Environmental impacts of SMEs and the effects of formal management tools: evidence from EU's largest survey", *Corporate Social Responsibility and Environmental Management*, Vol. 23 No. 5, pp. 297-307, doi: [10.1002/csr.1376](https://doi.org/10.1002/csr.1376).
- Grabner, I. and Moers, F. (2013), "Management control as a system or a package? Conceptual and empirical issues", *Accounting, Organizations and Society*, Vol. 38 Nos 6/7, pp. 407-419, doi: [10.1016/j.aos.2013.09.002](https://doi.org/10.1016/j.aos.2013.09.002).

- Groen, B.A., van de Belt, M. and Wilderom, C.P. (2012), "Enabling performance measurement in a small professional service firm", *International Journal of Productivity and Performance Management*, Vol. 61 No. 8, pp. 839-862, doi: [10.1108/17410401211277110](https://doi.org/10.1108/17410401211277110).
- Grubnic, S., Herzog, C., Gond, J.P. and Moon, J. (2015), "A new era-extending environmental impact to a broader sustainability agenda: the case of commercial group", *Social and Environmental Accountability Journal*, Vol. 35 No. 3, pp. 176-193, doi: [10.1080/0969160X.2015.1096804](https://doi.org/10.1080/0969160X.2015.1096804).
- Guenther, E., Endrikat, J. and Guenther, T.W. (2016), "Environmental management control systems: a conceptualization and a review of the empirical evidence", *Journal of Cleaner Production*, Vol. 136, pp. 147-171, doi: [10.1016/j.jclepro.2016.02.043](https://doi.org/10.1016/j.jclepro.2016.02.043).
- Halme, M. and Korpela, M. (2014), "Responsible innovation toward sustainable development in small and medium-sized enterprises: a resource perspective", *Business Strategy and the Environment*, Vol. 23 No. 8, pp. 547-566, doi: [10.1002/bse.1801](https://doi.org/10.1002/bse.1801).
- Halme, M., Rintamäki, J., Knudsen, J.S., Lankoski, L. and Kuisma, M. (2018), "When is there a sustainability case for CSR? Pathways to environmental and social performance improvements", *Business and Society*, Vol. 59 No. 6, doi: [10.1177/0007650318755648](https://doi.org/10.1177/0007650318755648).
- Hillary, R. (2004), "Environmental management systems and the smaller enterprise", *Journal of Cleaner Production*, Vol. 12 No. 6, pp. 561-569, doi: [10.1016/j.jclepro.2003.08.006](https://doi.org/10.1016/j.jclepro.2003.08.006).
- ISO 14001: 2015 (2015), *ISO 14001: Environmental Management Systems – Requirements with Guidance for Use*, The International Standards Organisation, Geneva.
- Johnstone, L. (2019), "Theorising and conceptualising the sustainability control system for effective sustainability management", *Journal of Management Control*, Vol. 30 No. 1, pp. 25-64, doi: [10.1007/s00187-019-00277-w](https://doi.org/10.1007/s00187-019-00277-w).
- Johnstone, L. (2020), "A systematic analysis of environmental management systems in SMEs: possible research directions from a management accounting and control stance", *Journal of Cleaner Production*, Vol. 244, doi: [10.1016/j.jclepro.2019.118802](https://doi.org/10.1016/j.jclepro.2019.118802).
- Johnstone, L. (2021), "Facilitating sustainability control in SMEs through the implementation of an environmental management system", *Journal of Management Control*, Vol. 32 No. 4, doi: [10.1007/s00187-021-00329-0](https://doi.org/10.1007/s00187-021-00329-0).
- Johnstone, L. and Hallberg, P. (2020), "ISO 14001 adoption and environmental performance in small to medium sized enterprises", *Journal of Environmental Management*, Vol. 266, doi: [10.1016/j.jenvman.2020.110592](https://doi.org/10.1016/j.jenvman.2020.110592).
- Kearins, K., Collins, E. and Tregidga, H. (2010), "Beyond corporate environmental management to a consideration of nature in visionary small enterprise", *Business and Society*, Vol. 49 No. 3, pp. 512-547, doi: [10.1177/0007650310368988](https://doi.org/10.1177/0007650310368988).
- Kerr, J., Rouse, P. and de Villiers, C. (2015), "Sustainability reporting integrated into management control systems", *Pacific Accounting Review*, Vol. 27 No. 2, pp. 189-207, doi: [10.1108/PAR-08-2012-0034](https://doi.org/10.1108/PAR-08-2012-0034).
- Kolk, A. and Perego, P. (2014), "Sustainable bonuses: sign of corporate responsibility or window dressing?", *Journal of Business Ethics*, Vol. 119 No. 1, pp. 1-15, doi: [10.1007/s10551-012-1614-x](https://doi.org/10.1007/s10551-012-1614-x).
- Kruis, A.M., Speklé, R.F. and Widener, S.K. (2016), "The levers of control framework: an exploratory analysis of balance", *Management Accounting Research*, Vol. 32, pp. 27-44, doi: [10.1016/j.mar.2015.12.002](https://doi.org/10.1016/j.mar.2015.12.002).
- Laguir, L., Laguir, I. and Tchameni, E. (2019), "Implementing CSR activities through management control systems", *Accounting, Auditing and Accountability Journal*, Vol. 32 No. 2, pp. 531-555, doi: [10.1108/AAAJ-05-2016-2566](https://doi.org/10.1108/AAAJ-05-2016-2566).
- Laskurain, I., Ibarloza, A., Larrea, A. and Allur, E. (2017), "Contribution to energy management of the main standards for environmental management systems: the case of ISO 14001 and EMAS", *Energies*, Vol. 10 No. 11, p. 1758, doi: [10.3390/en10111758](https://doi.org/10.3390/en10111758).
- Lavia López, O. and Hiebl, M.R. (2014), "Management accounting in small and medium-sized enterprises: current knowledge and avenues for further research", *Journal of Management Accounting Research*, Vol. 27 No. 1, pp. 81-119, doi: [10.2308/jmar-50915](https://doi.org/10.2308/jmar-50915).

-
- Ligonie, M. (2021), "Sharing sustainability through sustainability control activities. a practice-based analysis", *Management Accounting Research*, Vol. 50, doi: [10.1016/j.mar.2020.100726](https://doi.org/10.1016/j.mar.2020.100726).
- Lindlof, T.R. and Taylor, B.C. (2002), *Qualitative Communication Research Methods*, Sage, Thousand Oaks, CA, pp. 170-208.
- Lueg, R. and Radlach, R. (2016), "Managing sustainable development with management control systems: a literature review", *European Management Journal*, Vol. 34 No. 2, pp. 158-171, doi: [10.1016/j.emj.2015.11.005](https://doi.org/10.1016/j.emj.2015.11.005).
- Lukka, K. and Vinnari, E. (2014), "Domain theory and method theory in management accounting research", *Accounting, Auditing and Accountability Journal*, Vol. 27 No. 8, pp. 1308-1338, doi: [10.1108/AAAJ-03-2013-1265](https://doi.org/10.1108/AAAJ-03-2013-1265).
- Malmi, T. and Brown, D.A. (2008), "Management systems as a package-opportunities, challenges and research directions", *Management Accounting Research*, Vol. 19 No. 4, pp. 287-300, doi: [10.1016/j.mar.2008.09.003](https://doi.org/10.1016/j.mar.2008.09.003).
- Martin-de Castro, G., Amores-Salvadó, J., Navas-López, J.E. and Balarezo-Nuñez, R.M. (2017), "Exploring the nature, antecedents and consequences of symbolic corporate environmental certification", *Journal of Cleaner Production*, Vol. 164, pp. 664-675, doi: [10.1016/j.jclepro.2017.06.238](https://doi.org/10.1016/j.jclepro.2017.06.238).
- Mazzi, A., Toniolo, S., Mason, M., Aguiari, F. and Scipioni, A. (2016), "What are the benefits and difficulties in adopting an environmental management system? The opinion of italian organizations", *Journal of Cleaner Production*, Vol. 139, pp. 873-885, doi: [10.1016/j.jclepro.2016.08.053](https://doi.org/10.1016/j.jclepro.2016.08.053).
- Milne, M.J. and Gray, R. (2013), "W(h)ither ecology? The triple bottom line, the global reporting initiative, and corporate sustainability reporting", *Journal of Business Ethics*, Vol. 118 No. 1, pp. 13-29, doi: [10.1007/s10551-012-1543-8](https://doi.org/10.1007/s10551-012-1543-8).
- Moore, G. and Spence, L. (2006), "Responsibility and small business", *Journal of Business Ethics*, Vol. 67 No. 3, pp. 219-226, doi: [10.1007/s10551-006-9180-8](https://doi.org/10.1007/s10551-006-9180-8).
- Narayanan, V. and Boyce, G. (2019), "Exploring the transformative potential of management control systems in organisational change towards sustainability", *Accounting, Auditing and Accountability Journal*, Vol. 32 No. 5, pp. 1210-1239, doi: [10.1108/AAAJ-04-2016-2536](https://doi.org/10.1108/AAAJ-04-2016-2536).
- Nawrocka, D. (2008), "Environmental supply chain management, ISO 14001 and RoHS. How are small companies in the electronics sector managing?", *Corporate Social Responsibility and Environmental Management*, Vol. 15 No. 6, pp. 349-360, doi: [10.1002/csr.176](https://doi.org/10.1002/csr.176).
- Norris, G. and O'Dwyer, B. (2004), "Motivating socially responsive decision making: the operation of management controls in a socially responsive organisation", *The British Accounting Review*, Vol. 36 No. 2, pp. 173-196, doi: [10.1016/j.bar.2003.11.004](https://doi.org/10.1016/j.bar.2003.11.004).
- Parker, L.D. (2005), "Social and environmental accountability research: a view from the commentary box", *Accounting, Auditing & Accountability Journal*, Vol. 18 No. 6, pp. 842-860, doi: [10.1108/09513570510627739](https://doi.org/10.1108/09513570510627739).
- Pelz, M. (2019), "Can management accounting be helpful for young and small companies? Systematic review of a paradox", *International Journal of Management Reviews*, Vol. 21 No. 2, pp. 256-274, doi: [10.1111/ijmr.12197](https://doi.org/10.1111/ijmr.12197).
- Perez, Sanchez, D., Barton, J.R. and Bower, D. (2003), "Implementing environmental management in SMEs", *Corporate Social Responsibility and Environmental Management*, Vol. 10 No. 2, pp. 67-77, doi: [10.1002/csr.37](https://doi.org/10.1002/csr.37).
- Pondeville, S., Swaen, V. and De Rongé, Y. (2013), "Environmental management control systems: the role of contextual and strategic factors", *Management Accounting Research*, Vol. 24 No. 4, pp. 317-332, doi: [10.1016/j.mar.2013.06.007](https://doi.org/10.1016/j.mar.2013.06.007).
- Power, M. (1997), *The Audit Society: Rituals of Verification*, Oxford University Press, Oxford.
- Qian, W., Burritt, R. and Monroe, G. (2011), "Environmental management accounting in local government: a case of waste management", *Accounting, Auditing and Accountability Journal*, Vol. 24 No. 1, pp. 93-128, doi: [10.1108/09513571111098072](https://doi.org/10.1108/09513571111098072).

- Riccaboni, A. and Leone, E.L. (2010), "Implementing strategies through management control systems: the case of sustainability", *International Journal of Productivity and Performance Management*, Vol. 59 No. 2, pp. 130-144, doi: [10.1108/17410401011014221](https://doi.org/10.1108/17410401011014221).
- Roberts, J. (1991), "The possibilities of accountability", *Accounting, Organizations and Society*, Vol. 16 No. 4, pp. 355-368, doi: [10.1016/0361-3682\(91\)90027-C](https://doi.org/10.1016/0361-3682(91)90027-C).
- Robson, K., Plangger, K., Kietzmann, J.H., McCarthy, I. and Pitt, L. (2016), "Game on: engaging customers and employees through gamification", *Business Horizons*, Vol. 59 No. 1, pp. 29-36, doi: [10.1016/j.bushor.2015.08.002](https://doi.org/10.1016/j.bushor.2015.08.002).
- Rodrigue, M., Magnan, M. and Boulianne, E. (2013), "Stakeholders' influence on environmental strategy and performance indicators: a managerial perspective", *Management Accounting Research*, Vol. 24 No. 4, pp. 301-316, doi: [10.1016/j.mar.2013.06.004](https://doi.org/10.1016/j.mar.2013.06.004).
- Sands, J.S., Rae, K.N. and Gadenne, D. (2016), "An empirical investigation on the links within a sustainability balanced scorecard (SBSC) framework and their impact on financial performance", *Accounting Research Journal*, Vol. 29 No. 2, pp. 154-178, doi: [10.1108/ARJ-04-2015-0065](https://doi.org/10.1108/ARJ-04-2015-0065).
- Scapens, R.W. (1990), "Researching management accounting practice: the role of case study methods", *The British Accounting Review*, Vol. 22 No. 3, pp. 259-281, doi: [10.1016/0890-8389\(90\)90008-6](https://doi.org/10.1016/0890-8389(90)90008-6).
- Simons, R. (1995), *Levers of Control: How Managers Use Innovative Control Systems to Drive Strategic Renewal*, Harvard Business School Press, Boston, MA.
- Singh, M., Brueckner, M. and Padhy, P.K. (2015), "Environmental management system ISO 14001: effective waste minimisation in small and medium enterprises in India", *Journal of Cleaner Production*, Vol. 102, pp. 285-301, doi: [10.1016/j.jclepro.2015.04.028](https://doi.org/10.1016/j.jclepro.2015.04.028).
- Soderstrom, K.M., Soderstrom, N.S. and Stewart, C.R. (2017), "Sustainability/CSR research in management accounting: a review of the literature", *Advances in Management Accounting*, Vol. 28, Emerald Publishing Limited, Bingley, pp. 59-85, doi: [10.1108/S1474-787120170000028003](https://doi.org/10.1108/S1474-787120170000028003).
- Stubblefield Loucks, E., Martens, M.L. and Cho, C.H. (2010), "Engaging small-and medium-sized businesses in sustainability", *Sustainability Accounting, Management and Policy Journal*, Vol. 1 No. 2, pp. 178-200, doi: [10.1108/20408021011089239](https://doi.org/10.1108/20408021011089239).
- Sundin, H. and Brown, D.A. (2017), "Greening the black box: integrating the environment and management control systems", *Accounting, Auditing and Accountability Journal*, Vol. 30 No. 3, pp. 620-642, doi: [10.1108/AAAJ-03-2014-1649](https://doi.org/10.1108/AAAJ-03-2014-1649).
- Unerman, J. and Chapman, C. (2014), "Academic contributions to enhancing accounting for sustainable development", *Accounting, Organizations and Society*, Vol. 39 No. 6, pp. 385-394, doi: [10.1016/j.aos.2014.07.003](https://doi.org/10.1016/j.aos.2014.07.003).
- Virtanen, T., Tuomaala, M. and Pentti, E. (2013), "Energy efficiency complexities: a technical and managerial investigation", *Management Accounting Research*, Vol. 24 No. 4, pp. 401-416, doi: [10.1016/j.mar.2013.06.002](https://doi.org/10.1016/j.mar.2013.06.002).
- White, G., Lomax, M. and Parry, G. (2014), "The implementation of an environmental management system in the not-for-profit sector", *Benchmarking: An International Journal*, Vol. 21 No. 4, pp. 509-526, doi: [10.1108/BIJ-11-2012-0073](https://doi.org/10.1108/BIJ-11-2012-0073).
- Wijethilake, C. and Upadhaya, B. (2020), "market drivers of sustainability and sustainability learning capabilities: the moderating role of sustainability control systems", *Business Strategy and the Environment*, Vol. 29 No. 6, pp. 2297-2309, doi: [10.1002/bse.2503](https://doi.org/10.1002/bse.2503).
- Wijethilake, C., Munir, R. and Appuhami, R. (2018), "Environmental innovation strategy and organizational performance: enabling and controlling uses of management control systems", *Journal of Business Ethics*, Vol. 151 No. 4, pp. 1139-1160, doi: [10.1007/s10551-016-3259-7](https://doi.org/10.1007/s10551-016-3259-7).
- Witjes, S., Vermeulen, W.J. and Cramer, J.M. (2017), "Exploring corporate sustainability integration into business activities. experiences from 18 small and medium sized enterprises in The Netherlands", *Journal of Cleaner Production*, Vol. 153, pp. 528-538, doi: [10.1016/j.jclepro.2016.02.027](https://doi.org/10.1016/j.jclepro.2016.02.027).

-
- Won Kim, N.K. and Matsumura, E.M. (2017), "Managerial accounting research in corporate social responsibility: a framework and opportunities for research", *Advances in Management Accounting*, Vol. 28, pp. 31-58, doi: [10.1108/S1474-787120170000028002](https://doi.org/10.1108/S1474-787120170000028002).
- Yin, H. and Schmeidler, P.J. (2009), "Why do standardized ISO 14001 environmental management systems lead to heterogeneous Environmental outcomes?", *Business Strategy and the Environment*, Vol. 18 No. 7, pp. 469-486, doi: [10.1002/bse.629](https://doi.org/10.1002/bse.629).
- Zimmerling, E., Höllig, C.E., Sandner, P.G. and Welp, I.M. (2018), "Exploring the influence of common game elements on ideation output and motivation", *Journal of Business Research*, Vol. 94, doi: [10.1016/j.jbusres.2018.02.030](https://doi.org/10.1016/j.jbusres.2018.02.030).

Table A1.
Sample interview
questions

Appendix 1		
Question theme	Auditors*	SME ISO 14001 representatives
<i>Round 1 (2018 and 2019) sample questions</i>		
Strategic level	What are the main reasons for SMEs to implement an EMS accredited to ISO 14001?	What was the company's main reason for adopting ISO 14001? Can you tell me about your environmental policy, what does it include?
Operational processes and procedures	What are the key challenges for SMEs in the ISO 14001 implementation process? (How) does the audit process and ISO 14001 standardisation and certification help SMEs improve environmental operations? What role(s) do managerial and non-managerial employees had in the ISO 14001 implementation process within SMEs?	Elaborate upon the specific processes in place to meet annual environmental performance targets? How do you ensure that general employees work in an environmentally effective way? How aware and involved are the general employees on the company's use of ISO 14001?
Performance outcomes	How do SMEs typically present their environmental performance improvements for ISO 14001 certification? For examples, how are these performance outcomes assessed?	How is environmental performance defined by the company? How do you measure/ evaluate the results of your work?
General questions	What are the main benefits/challenges for SMEs in using ISO 14001?	What have been the main benefits/challenges in using ISO 14001? Elaborate upon any future plans you have to improve environmental performance within the company
<i>Round 2 (2021) sample questions</i>		
Communicating the EMS	How important is it for SMEs to report environmental management? For SMEs, how is environmental management normally reported internally/externally?	How is environmental management communicated within the company? How is environmental management reported externally? Who do you report to and why?
Possible impact of an externally induced crisis (i.e. the COVID-19 pandemic) has on development of controls tied to ISO 14001	How has the pandemic generally affected environmental management and/or the environmental management system for your clients? How has the pandemic generally affected your work as an environmental auditor?	How has the pandemic affected environmental management and/or the environmental management system within the organisation?
Note: *That only one consultant participated in the study and the questions were not dissimilar to those designed for the auditors		

Corresponding author
Leanne Johnstone can be contacted at: leanne.johnstone@oru.se