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RESEARCH ARTICLE

Unpacking the Process of Integrating Sustainability into Management Control Systems: A Literature Review and an Analytical Framework

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ABSTRACT

In recent years, organizations are adapting their control systems to meet institutional demands for sustainability disclosure. However, the process of integrating sustainability within management control systems (MCSs) remains underexplored, despite extensive literature on sustainability controls. Through the review of 85 articles, we investigate how the integration process unfolds, how and why it is addressed by different actors and identify avenues for future research. We developed an analytical framework that highlights key actors shaping the process, their purposes, the main dimensions of integration and its potential barriers. We contribute to theory by proposing an extended framing of the process, which comprises a conceptual dimension (embedding of sustainability values and interconnection of MCSs and sustainability control systems) and a technical dimension (architecture design). We also offer practical and policy insights, clarifying the influential actors' roles, suggesting different ways to configure integrated systems and illustrating how organizations respond differently to institutional pressures.

1 | Introduction

Since the 1920s, when Donham (1927) introduced the notion of the *businessman*'s social responsibility towards the community, awareness of sustainability has progressively grown as both a normative value and a managerial practice. Over time, an evolving regulatory landscape has institutionalized sustainability through formalized disclosure and accountability mechanisms (e.g., the CSRD), reshaping the social and political context in which firms operate (Arvidsson and Dumay 2022; Chen et al. 2022). What began as an ethical and moral issue has thus evolved into a managerial and performative quest to meet policymakers' expectations and comply with international regulatory demands.

Following these dynamics, on the one hand, some organizations have started adapting their practices and embedding sustainability more pervasively into management control systems (MCSs) and other controls (Hristov and Searcy 2025), also to support disclosure obligations. MCSs can be defined as 'routines and procedures managers use to maintain or alter patterns in organizational activities' (Simons 1995, 5), which 'increase the probability that organisational actors will behave in ways consistent with the objectives of the dominant organizational

This paper examines the process of integrating sustainability into management control systems. Based on a systematic review of 85 studies, we developed an analytical framework capturing the conceptual and technical dimensions of the integration process, key actors and barriers shaping the process. We extend the concept of integration by distinguishing two levels: the embedding of sustainability values in management control systems and the degree of overlap between management control systems and sustainability control systems.

coalition' (Abernethy and Chua 1996, 573). By realigning strategic objectives towards environmental and social values, MCSs should play a pivotal role in guiding sustainability decision-making, orienting managerial choices and shaping individual behaviours accordingly (Perego and Hartmann 2009; Sharma and Kelly 2015; Schaltegger and Burritt 2018).

On the other hand, some organizations started developing *ad hoc* controls to address sustainability-related aspects, such as eco-controls or environmental control systems (e.g., Figge et al. 2002; Burritt 2004; Abdel-Maksoud et al. 2021). Collectively, these controls can be defined as sustainability control systems (SCSs), as they 'help organizations to measure, control and disclose [sustainability performance]' and 'are used to supply information for decision making to ensure the attainment of [sustainability] objectives, and to provide persuasive evidence supporting the benefits of such actions' (Henri and Journeault 2010, 63).

Current accounting literature has discussed how organizations can configure the relationship between sustainability strategies and the use of controls, arguing that diverse paths of *integration* can be pursued to embed sustainability in MCSs, leading to differentiated outcomes (Gond et al. 2012; Beusch et al. 2022). Integration has been framed as a 'socio-technical process, with technical and methodological as well as social and cognitive components', leading to varying 'degrees of overlap between control systems' (Gond et al. 2012, 206). However, suggesting that embedding sustainability in MCSs is only a matter of *how* integration is achieved risks simplifying the problem, overlooking other underlying assumptions.

Indeed, viewing the integration merely with a socio-technical, processual view risks assuming its operationalization as automatically more effective or 'natural' to enact sustainability strategies. However, following the critical and pragmatic debates around sustainability and management accounting (Baker et al. 2023), this should not be taken for granted. First, not all organizations might have control structures (as defined by Simons 1995) properly in place, or ready to be adapted to sustainability strategies, or be able to develop new *ad hoc* mechanisms to measure environmental or social performances. Second, controls can have different functions and characteristics. Some may work more effectively when separated rather than integrated due to their structural features (Milne 1996); others might be better suited to coordinate a balanced pursuit of economic and sustainability objectives, instead of focusing on their integration (Bouten and Hoozée 2022). Indeed, conflicts between sustainability values and traditional controls logics may render integration particularly challenging also from a normative perspective, with particular problems related to the definition of priorities (Milne 1996; Bebbington and Thomson 2013). Accordingly, organizations might implement sustainability-oriented controls for different (and sometimes contradictory) purposes, with moral or performative intents. Their approach may depend on the influence of various actors within or outside organizational boundaries, whose needs might be difficult to balance (Hansen and Schaltegger 2016).

Our study therefore examines the integration of sustainability in MCSs, drawing on its socio-technical perspective (Gond et al. 2012) and engaging with the challenges debated by the critical and pragmatic dialogues (Baker et al. 2023). We aim to analyse the complexity underlying the process, challenging integration as a path that should always be preferred to achieve effective control systems for sustainability. Specifically, we answer the following research questions: *(RQ1) How does the process of integrating sustainability into MCSs unfold? (RQ2) How and why is it addressed by different actors? (RQ3) How might the integration process be hindered?*

To address these questions, we conducted a systematic review of 85 research articles; examining current literature allowed us to develop an analytical framework—unpacking the integration process, the actors influencing it, their purposes and the main barriers to embedding sustainability in controls—and to propose avenues for future research. Our analyses led to an extended and multidimensional conceptualization of integration, moving beyond the traditional understanding of it as a 'degree of overlap' between conventional MCSs and SCSs (Gond et al. 2012, 206).

First, we discuss integration as a process characterized by two interrelated levels. The conceptual level reflects the extent to which sustainability values can be embedded in MCSs and the potential degrees of interconnection between conventional MCSs and SCSs. The technical level concerns design choices regarding systems' architecture and the positioning of sustainability-related contents relative to other types of information (financial or operational). Second, we examine the potential limits of integration and identify three types of barriers (technical, cognitive and organizational) that might undermine the process or render 'non-integration' more appropriate. From a practical and policy-oriented perspective, we discuss how internal and external actors interact in addressing integration, offering insights into how organizations can (re)interpret institutional demands and configure control systems according to distinct strategic orientations.

The paper is structured as follows. First, we describe our methodology and provide a descriptive overview of the final sample. Then, we present our findings by proposing an analytical framework that outlines the integration process; for each perspective, we identify literature gaps and suggest potential research avenues. Finally, the concluding section discusses the theoretical contributions, practical and policy implications and limitations of our study.

2 | Methodology

To achieve a comprehensive understanding of the integration process, we conducted a systematic literature review following the guidelines of Denyer and Tranfield (2009) and the PRISMA structure (see also Liberati et al. 2009; Hardies et al. 2024). Systematic reviews constitute replicable and rigorous tools for capturing, evaluating and integrating scientific knowledge (Perkmann et al. 2013) and have been widely adopted across sustainability, management and accounting research (Ranjbari et al. 2021; Schaltegger et al. 2022; Brunelli et al. 2023). Our study contributes to this stream by unpacking the integration process and identifying emerging tensions and research gaps, thereby offering a basis for future investigations.

The following sections describe the data collection process and provide an overview of the final sample.

2.1 | Search Strategy, Selection Criteria and Analytical Approach

We relied on Scopus as our primary database owing to its reputation as one of the most comprehensive and extensive citation databases (Magistretti et al. 2021). Compared with other academic databases, Scopus provides broader journal coverage, with only a marginal proportion of scientific outlets not included in its indexing (Waltman 2016). We constructed two sets of keywords around MCSs and sustainability, combined through Boolean operators. The following search query was applied, according to our search strategy, to the title, abstract and keywords: ('management control*' OR 'control system*' OR 'performance management' OR 'performance measurement' OR 'manage* accounting') AND (sustainab* OR environment* OR social). To ensure a focused sample, we restricted the results to English-language journal articles within the 'business, management, accounting' subject area, without time limitations. This initial step resulted in a set of 5218 articles. Following Marzi et al. (2025), to ensure higher-quality coverage, we retained only studies published in journals ranked ABS 2, 3, 4 or 4* (see the 2025 Academic Journal Guide), resulting in 2728 articles.

To further refine the sample, all authors jointly defined eligibility criteria aligned with our objectives, namely to understand (i) the integration process, (ii) the actors shaping it, (iii) their purposes and (iv) potential barriers (see Schaltegger et al. 2022; Hardies et al. 2024). We excluded studies which (i) did not focus on for-profit organizations (we excluded organizations with very different financial and non-financial objectives, stakeholders and purposes), (ii) did not examine MCSs (or their components) in a narrow sense, (iii) did not focus on systems dealing with sustainability management and control or impacting sustainable performance, (iv) mentioned control systems only marginally or (v) adopted a purely technical perspective, neglecting organizational implications. In the first refinement step, the first two authors independently screened titles and abstracts of the 2728 articles. Discrepancies were discussed and resolved jointly—following the procedure of Hardies et al. (2024)—leading to a preliminary sample of 292 articles. In a second round, we retained only articles specifically addressing the integration process, even marginally. The same authors conducted full-text assessments to ensure consistency with all the eligibility criteria. After resolving discrepancies, the sample was reduced to 73 articles.

To avoid missing influential studies not identified through database searching, we conducted backward citation tracking on the 73 articles (Adams et al. 2016), identifying seminal contributions repeatedly cited across our set but not captured in the initial search. The final dataset consisted of 85 articles. The full search and screening process is summarized in Figure 1, following the PRISMA structure.

The results of the SLR were conceptualized into an analytical framework, abductively developed through continuous iterations among insights emerging from the 85 studies, until thematic saturation was reached (Stephan et al. 2016; Schaltegger et al. 2022). Specifically, our thematic analysis followed an iterative cycle of examining empirical materials (i.e., the content of the reviewed articles), clustering evidence into emerging perspectives related to the integration process and returning to the literature to refine, connect and theoretically inform these categories. All authors iterated between empirics, theory and emerging clusters until reaching consensus that the resulting analytical framework provided a coherent, theoretically informed and sufficiently comprehensive representation of the integration process.

2.2 | An Overview of Collected Data

Figure 2 illustrates the temporal distribution of the sample, indicating that scholarly attention to the integration of sustainability into MCSs is relatively recent. Although early discussions date back to the 1990s, contributions have increased substantially since 2015. In addition, the most represented outlets belong to accounting, management and business ethics domains, reflecting the interdisciplinary nature of the topic. Table 1 reports the 10 journals with the highest number of publications.

Table 2 presents the sustainability dimensions addressed in the reviewed studies, revealing a clear predominance of the environmental perspective over the social dimension. From a theoretical perspective, Table 3 summarizes the main theories adopted, as well as the conventional frameworks mobilized to conceptualize the integration of sustainability into MCSs. Evidence suggests that most studies draw on two main theoretical perspectives. On the one hand, theories that emphasize the search for organizational legitimacy within the institutional context (e.g., institutional and stakeholder theory); on the other hand, theories centred on individual behaviour and identity, highlighting the role of actors within organizational boundaries (e.g., agency, social identity and self-determination theory). Methodologically, the sample comprises 53 qualitative studies, 22 quantitative studies and 10 conceptual studies.

Finally, Figure 3 reports the geographical distribution of the selected articles, showing a strong concentration in Europe. This pattern likely reflects the recent evolution of the sustainability management and reporting normative landscape in Europe, which has intensified scholarly efforts to support organizations in their sustainability transition and in the development of new management and accounting practices.

3 | The Process of Integrating Sustainability in MCSs: Current Research and Future Agenda

In this section, we provide a systematic analysis of the 85 selected studies to consolidate fragmented insights and more comprehensively understand how the integration of sustainability into MCSs unfolds and how it is favoured or hindered by different variables. To do so, we developed an analytical framework that systematizes insights from extant research through six perspectives (see Figure 4).

The framework begins by identifying the actors who trigger and shape the integration process (external actors, internal actors

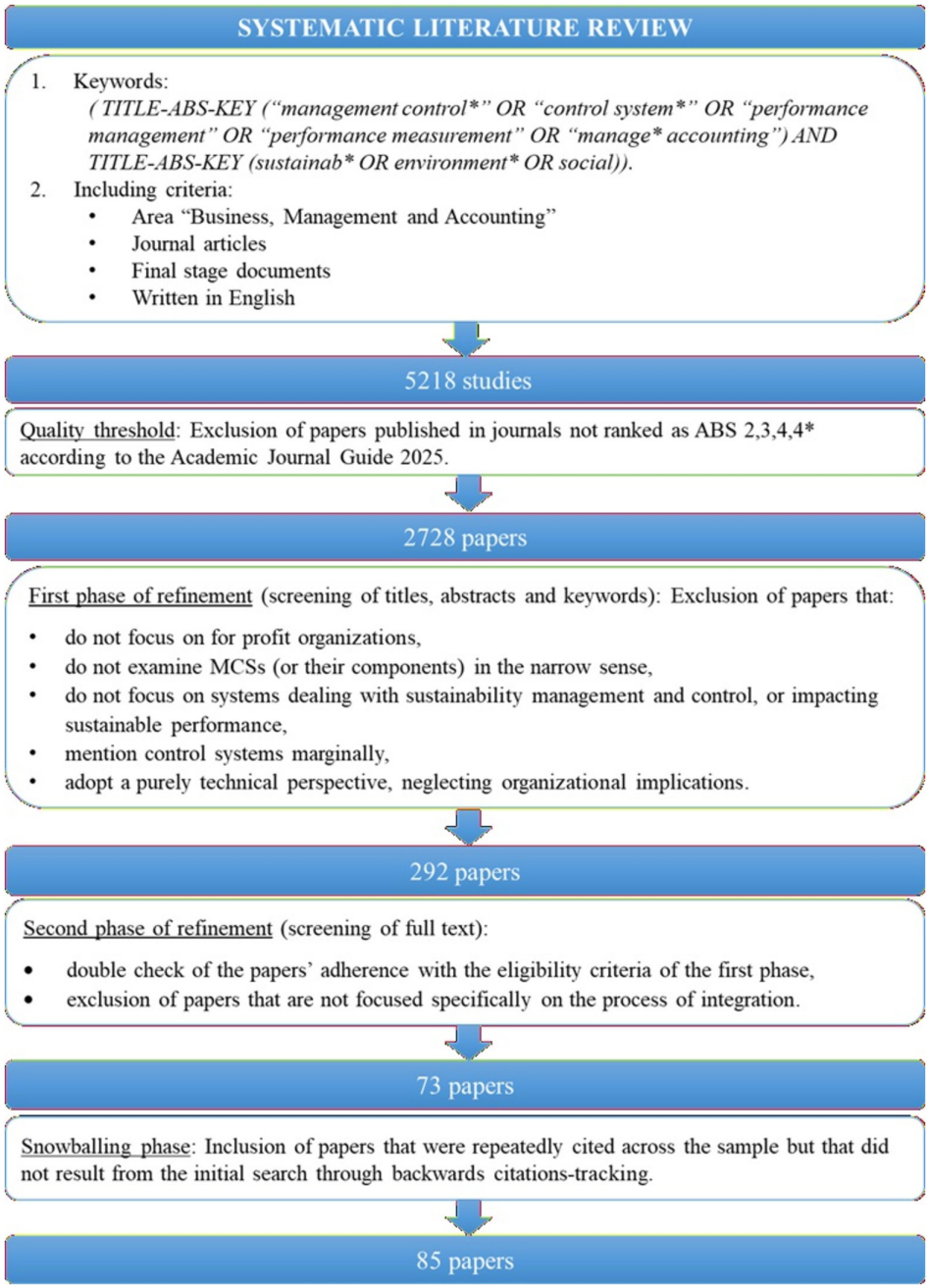

FIGURE 1 | PRISMA structure: Search and screening process.

and the organization), together with their purposes. It then articulates the process itself by distinguishing two main dimensions of integration (conceptual and technical). Particularly, the conceptual dimension comprises two levels: the embedding of sustainability values into MCSs and the overlap of SCSs and conventional MCSs. Finally, the framework highlights three types of barriers that may arise before or during the integration process (technical, cognitive and organizational).

Overall, the framework offers a structured and theoretically informed lens to interpret the integration process, capturing its inherent complexity while exploring both its potential benefits and limitations. Table 4 complements the analysis by identifying, for each perspective, the main research gaps and avenues for future research.

3.1 | Actors

With 'actors', we refer to all subjects whose behaviour directly or indirectly influences the integration process, functioning as either barriers or facilitators. The literature distinguishes these actors according to their position relative to organizational boundaries (internal vs. external) and their degree of power and legitimacy (primary vs. secondary stakeholders) (e.g., Abdel-Maksoud et al. 2021).

External actors are typically institutional entities that exert different types of pressures (see DiMaggio and Powell 1983; Scott 1987) to motivate firms to engage with sustainability and embed it within their MCSs (e.g., Dubey et al. 2017; Edirisinghe et al. 2024; León-Bravo and Caniato 2024). These

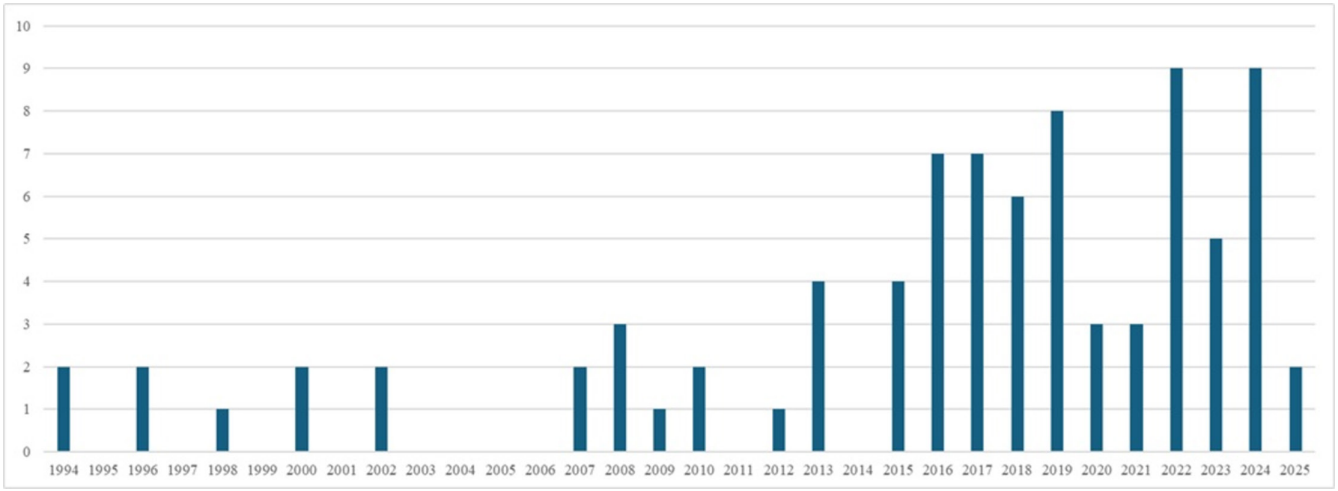

FIGURE 2 | Temporal distribution of the sample (number of articles per publication year).

TABLE 1 | Top 10 journals with the highest number of articles.

Journal	Articles
Accounting Auditing & Accountability Journal	16
Business Strategy and the Environment	10
Management Accounting Research	10
Journal of Business Ethics	6
Corporate Governance	4
Journal of Accounting and Organizational Change	3
Qualitative Research in Management and Accounting	3
Sustainability Accounting, Management and Policy Journal	3
Journal of Management Control	3
Journal of Management Accounting Research	3

TABLE 2 | Sustainability dimensions discussed by the articles.

Dimension of sustainability	Articles
Sustainability (holistic perspective)	41
Environmental (generic)	25
Corporate social responsibility	12
Social (generic)	3
Carbon footprint	2
Gender	1
Climate change	1

TABLE 3 | Theories and management control frameworks adopted by the articles.

Theory	Articles
Institutional theory	7
Stakeholder theory	7
Resource-based view	5
Contingency theory	3
Legitimacy theory	3
Agency theory	2
Neoclassical economic theory	2
Organizational and social identity theories	2
Structuration theory	2
Self-determination theory	2
Behavioural decision theory	1
Theory of power	1
Social conformity theory	1
Psychological ownership theory	1
Theory of professional jurisdiction	1
Signalling theory	1
Management control frameworks	**Articles**
Simons' levers of control	11
Malmi and Brown's controls package	2
Tessier and Otley's control framework	1
Ferreira and Otley's control framework	1

subjects generally influence control mechanisms that internalize institutional expectations into decision-making processes, rather than internal systems designed to incentivize or reward employees (Lisi 2015). Coercive and normative forces have been identified as key drivers of sustainability-oriented performance measurement systems (PMSs)[1] (James 1994; Passetti et al. 2018; Abdel-Maksoud et al. 2021). They can enhance comparability among firms (Dubey et al. 2017) or promote compliance with regulatory standards (Länsiluoto and Järvenpää 2008). Their effectiveness, however, is often

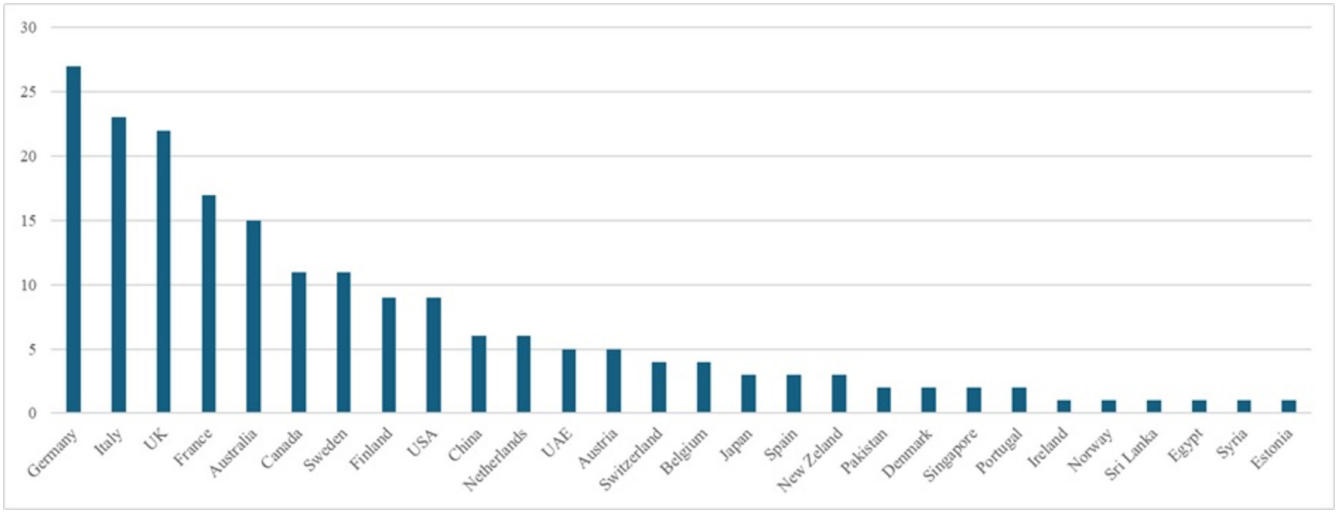

FIGURE 3 | Geographical distribution of the sample (number of articles per country).

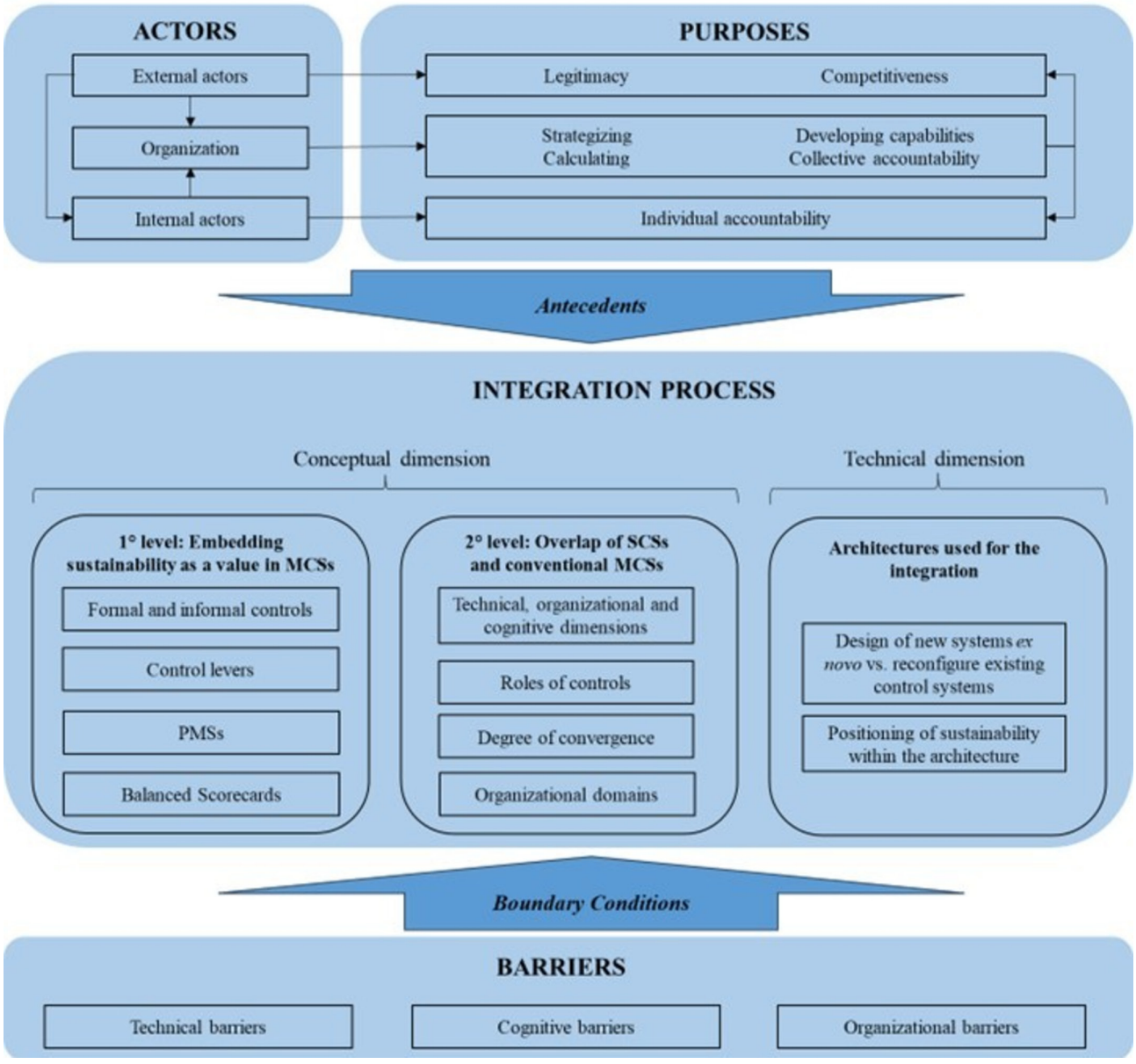

FIGURE 4 | The process of integrating sustainability into MCSs: An analytical framework.

TABLE 4 | Research gaps and future research directions.

Topic	Research gap	Examples of research questions
Actors	Understanding specific effects of institutional entities (especially mimetic pressures) on the integration process	• How and why do mimetic pressures foster (or hinder) the integration process? • Under what conditions do institutional entities exert negative effects on the integration process, and through which mechanisms can these effects be mitigated?
	Understanding the antecedents of firms' proactiveness and the determinants of their integration process	• What actors or institutional conditions foster (or hinder) firms' proactiveness towards the integration process, and through which mechanisms? • What are the main determinants of proactive firms' integration process (e.g., governance structures, organizational size and performance, industry characteristics)?
	Understanding the interactions between accountants and other non-accounting roles during the integration process	• How do accountants and non-accountants enact their roles during the integration process, and how do their interactions unfold? • Where are the boundaries between their roles set, and under what circumstances are these boundaries crossed?
Purposes	Understanding differences in the integration processes when legitimacy is performance-driven versus reputation-driven	• How does the integration process differ when driven by performance-based versus reputation-based legitimacy? • How do the internal and external actors interact across these two legitimacy pathways?
	Understanding the market and institutional conditions in which the integration process enhances organizational competitiveness	• Under what market and institutional conditions does the integration process enhance organizational competitiveness (e.g., in green industries, in regulated institutional contexts and in less competitive sectors)? • Through which mechanisms does the integration process create different types of competitive advantages (e.g., cost reductions, responsiveness)?
	Understanding the mechanisms through which the integration process shapes strategy and decision-making processes	• How does the connection between MCSs and SCSs support strategy formulation, renewal and implementation? • What strategic benefits arise from connecting MCSs and SCSs, compared with embedding sustainability solely within MCSs?
	Understanding the types of measurement information to embed through the integration process	• What types of information (e.g., accounting vs. physical, monetary vs. non-monetary) are most effectively introduced through the integration process? • How does the effectiveness of different data types vary for decision-making purposes?
	Understanding the development of new capabilities through the integration process	• What organizational capabilities can be developed through the integration process (e.g., sustainability related, other capabilities), and how do they emerge? • How are different actors and control systems involved in the capability development process?
	Understanding how the integration process reshapes organizational and individual accountability	• How does the integration of sustainability in different control types (e.g., in formal and informal controls, rewarding and non-rewarding controls, MCSs and SCSs) reshape accountability? • How is accountability distributed across organizational units (e.g., central vs. peripheral units, simple vs. complex structures), hierarchical levels and functions?

(Continues)

TABLE 4 | (Continued)

Topic	Research gap	Examples of research questions
Embedding sustainability in MCSs	Understanding how the integration process reshapes the configuration and interaction of formal and informal controls	• How does sustainability integration unfold in formal and informal controls, and what are its determinants and effects? • How does the integration reshape interactions between formal and informal controls across different organizational contexts (e.g., simple vs. complex structures, green industries and different ownership structures)?
	Understanding how integration unfolds when new combinations of control levers are mobilized	• How does the integration occur when new combinations of control levers are mobilized, and what are their main determinants and effects? • Under what circumstances does integration lead to negative or unintended effects?
	Understanding how the integration process improves (or hinders) the standardization and refinement of systems and metrics	• How does the integration support (or hinder) improvements in the design and use of PMSs? • How does the integration promote (or limit) the standardization of sustainability performance metrics, and what benefits or challenges may emerge?
	Understanding how the integration process supports the prioritization of sustainability relative to other principles in BSCs	• How does the integration support (or hinder) the re-prioritization among sustainability, financial and other objectives? • How does the integration mitigate (or amplify) cultural tensions regarding sustainability's relevance?
Overlap of SCSs and conventional MCSs	Understanding the interrelationships among technical, organizational and cognitive dimensions of the systems integration	• How are the technical, organizational and cognitive dimensions of the integration process interrelated? • How do weaknesses in one dimension affect the others and the overall integration process?
	Understanding the effects of different controls combinations and the respective roles of MCSs and SCSs	• What combinations and roles of controls are most effective in different contexts, and how do MCSs and SCSs contribute to them? • How can organizations balance the relevance of MCSs and SCSs, and under what circumstances should MCSs or SCSs be prioritized?
	Understanding the most effective level of convergence between MCSs and SCSs	• What are the benefits and drawbacks of high vs. low convergence between MCSs and SCSs? • Is there a most effective level of convergence depending on dominant logics, and how can peripheral SCSs still support sustainability behaviours?
	Understanding how the integration is contextualized within and across different organizational domains	• How do organizations structure and coordinate the integration process across units and hierarchical levels, and how does it connect to the organization-level system? • How is heterogeneity across units' sustainability approach managed and how does it affect connections between different controls?
Architectures used for the integration	Understanding the challenges that arise when integrating sustainability into pre-existing MCSs	• What organizational tensions emerge when sustainability is integrated into existing MCSs, and how do different actors address them? • What antecedents shape these tensions, and what are the technical and organizational consequences?
	Understanding how new controlling structures can be designed and contextualized	• How are new controlling structures designed and aligned with existing ones, and what organizational, technical and cognitive implications arise? • Under what conditions is it preferable to design a new system rather than adapt an existing one?
	Understanding how sustainability is positioned relative to other content areas within integrated architectures	• What are the technical and organizational implications of hierarchical, semi-hierarchical, or flat integrations of sustainability? • Why and when should sustainability be embedded within other dimensions vs. added as a separate dimension?

(Continues)

TABLE 4 | (Continued)

Topic	Research gap	Examples of research questions
Barriers	Understanding the emergence and implications of technical barriers	• When and why do technical barriers emerge, and what effects do they produce? • How can organizations overcome or neutralize the impacts of technical barriers?
	Understanding the mechanisms underpinning the legitimacy of MCSs and SCSs	• What cognitive, organizational and technical mechanisms underpin system legitimacy? • When and why do SCSs achieve less legitimacy that traditional MCSs?
	Understanding how ambiguities in sustainability management affect the integration process	• What are the main causes of uncertainties around sustainability meanings and practices? • How do such uncertainties shape the integration process, and how can they be reduced?
	Understanding organizational imbalances that arise during integration	• When and how do organizational unbalances arise during integration? • How can the integration be rebalanced in terms of accountability across actors, units and roles?

contingent upon the presence of a committed top management team (Lisi 2015; Wang et al. 2019) or external requirements, such as reporting obligations (Narayanan and Boyce 2019). Conversely, weak legislation and corruption can deter integration (Edirisinghe et al. 2024), making the process dependent on the commitment of powerful internal actors. Evidence on mimetic pressures, instead, is more ambiguous. Some studies find limited or no impacts when competitive advantages (or other immediate benefits) are unclear (Dubey et al. 2017; Wang et al. 2019), whereas others observe that imitation efforts triggered by competitors directly affect integration (León-Bravo and Caniato 2024).

Focusing on the organization (as a collective entity), it can be understood as an autonomous actor whose strategic orientation significantly shapes the integration process (Pérez et al. 2007). The literature distinguishes between 'proactive' and 'reactive' strategies. Proactive firms actively embed sustainability values into their business models, whereas reactive organizations respond passively to external demands, primarily for legitimacy reasons (e.g., Jansson et al. 2000; Rodrigue et al. 2013; Mikes and Metzner 2023). Although external stakeholders typically drive reactive responses, the antecedents of proactivity are more nuanced. Key stakeholders can encourage proactive approaches and foster integration (Lisi 2015), yet market uncertainties about sustainability practices may hinder such initiatives (Pondeville et al. 2013). Proactive firms are generally more inclined to design and use dedicated SCSs, implementing sustainability metrics extensively for monitoring purposes (Bastini et al. 2022). At the same time, they tend to achieve greater alignment between SCSs and conventional MCSs, with their degree of overlap often depending on the 'greenness' of the industry, that is, the sector's environmental orientation (Ditillo and Lisi 2016).

Regarding internal actors, the literature shows that responsibility for sustainability integration extends beyond the finance function, encompassing a broader range of non-financial roles. This redistribution of accountability implies a more collective and cross-functional controlling power within the organization (Schaltegger and Zvezdov 2015). Nevertheless, management accountants keep their pivotal role in the integration process as main producers, coordinators and organizers of measurement systems, helping reduce their fragmentation and increasing their efficiency (Länsiluoto and Järvenpää 2008; Kurki and Järvenpää 2024). Individual perceptions and attitudes towards sustainability strongly shape each function's contribution to integration as well (Mistry et al. 2014; Kunz et al. 2025). Depending on their sense of ownership and role interpretation, individuals may act as 'gatekeepers' (Schaltegger and Zvezdov 2015, 341) or 'boundary spanners' (Johnstone 2019, 38) of sustainability information. These behaviours are influenced by multiple factors, including personal interests (Huber and Hirsch 2017), psychological ownership of the process (Kurki and Järvenpää 2024), the level of sustainability expertise (Schaltegger and Zvezdov 2015), the strength of one's role connection to sustainability and the ability to span across intra- and inter-organizational boundaries (Parker and Chung 2018; Johnstone 2019). Behavioural conflicts may emerge when individuals navigate competing logics within their role, such as sustainability and profit maximization (Kunz et al. 2025). In these cases, top management plays a crucial role in fostering integration, for example, by cultivating a sustainability culture (Beusch et al. 2022; Maughan 2023) or fostering active participation to sustainability initiatives across organizational levels (Lisi 2015).

3.2 | Purposes

Besides identifying 'who' drives or hinders integration, the literature also examined 'why' these actors behave in particular ways.

A first, widely discussed purpose concerns the pursuit of organizational legitimacy in the external environment (e.g., Rasolofo-Distler 2022), often linked to fulfilling moral and social responsibilities towards broader communities (Hansen and Schaltegger 2016). Integrated control systems can enhance legitimacy not only by providing periodic disclosure but also by fostering transparent interactions between internal members and external stakeholders, encouraging continuous improvements

of the control systems themselves (Pérez et al. 2007). Scholars identify different legitimacy pathways: performance-driven or reputation-driven. Organizations may embed key stakeholders' values into MCSs (Lisi 2015; Adib et al. 2021) or use PMSs to demonstrate how sustainability practices contribute to profitability (James 1994; Länsiluoto and Järvenpää 2008; Rodrigue et al. 2013). Others may pursue legitimacy symbolically, embedding sustainability narratives into MCSs merely to project an image of commitment (Durden 2008; Laguir et al. 2019). Tensions often emerge when organizations navigate between these two forms of legitimacy, particularly when facing conflicting or competing interests (Hansen and Schaltegger 2016). Although contextual conditions may reduce such conflicts (Rasolofo-Distler 2022), the integration process itself can also help manage them by clarifying priorities between sustainability and financial principles (Hahn et al. 2015; Bui et al. 2024).

A second externally driven purpose relates to improving competitiveness in the market (e.g., Journeault et al. 2016; Albertini 2019; Bastini et al. 2022). Integrating sustainability into MCSs can facilitate cost reductions, enabling first-mover advantages, and enhance firms' responsiveness to sustainability-related market risks and opportunities (e.g., Bui and De Villiers 2017; Laguir et al. 2019).

At the organizational level, the primary purpose is strategizing, that is, integrating sustainability into MCSs to support the strategic process, inform long-term decisions and translate sustainability objectives into concrete actions (e.g., Bartolomeo et al. 2000; Vieira et al. 2017; Rehman et al. 2021). Such integration, in turn, can support the evolution of existing control systems, addressing their inefficiencies (e.g., Milne 1996; Länsiluoto and Järvenpää 2010; Arjaliès and Mundy 2013), or foster the development of new dedicated sustainability PMSs (Mikes and Metzner 2023; Cristofaro et al. 2024). Therefore, it is not a 'one-shot process', but an iterative path where control systems evolve alongside the firm's strategic maturity (Gunarathne et al. 2023). As Gond et al. (2012) argue, strategizing is most effectively supported when SCSs become gradually integrated with formal MCSs, rather than isolated. This continuous adaptation, moreover, enhances both strategic alignment and external legitimacy (Mikes and Metzner 2023; Cristofaro et al. 2024).

Another internally oriented purpose concerns enhancing calculative capabilities and reinforcing a culture of measurement (Länsiluoto and Järvenpää 2010; Ghosh et al. 2019). Through integration, firms can enrich their PMSs with refined sustainability data—both accounting (monetary) and physical (non-monetary) information—increasing the clarity of their results and decision-making accuracy (e.g., Azzone and Manzini 1994; Burritt et al. 2002; Wang et al. 2019). Consequently, firms improve their ability to evaluate the feasibility of profitability or other types of goals, in light of sustainability constraints (Milne 1996; Johnstone 2019), and to identify performance gaps between targets and outcomes (Gunarathne et al. 2023; Cortés et al. 2024). Improved measurement accuracy supports also more credible and precise external communication (Henri and Journeault 2010) and fosters a balanced pursuit of (often competing) sustainability and financial objectives (Vieira et al. 2017), reinforcing organizational legitimacy (Bonacchi and Rinaldi 2007; Länsiluoto and Järvenpää 2008). However, evidence is mixed on the effectiveness of physical (non-financial) measures for decision-making, particularly when data are past-oriented rather than forward-looking (Bui and De Villiers 2017).

A smaller yet growing stream of research explores the purpose of developing other capabilities (besides calculative ones), emphasizing how integrating sustainability can foster learning and innovation (Bastini et al. 2022) and contribute to sustained competitive advantages (Albertini 2019). Mahmoudian et al. (2022) mention that developing sustainability-related capabilities requires the design of complex, multilayered SCSs with interacting mechanisms. However, the literature still offers limited insights into what specific capabilities can be developed through the integration process.

Finally, another central purpose of integration is strengthening accountability across and within organizational domains, clarifying responsibilities at collective and individual levels (Länsiluoto and Järvenpää 2010). Complex and formalized SCS structures—combining multiple controls positioned at different organizational levels and domains—can foster horizontal coordination and vertical alignment between corporate and subsidiary levels, facilitating the diffusion of sustainability commitment (Ghosh et al. 2019; Frostenson and Johnstone 2023).

From an individual perspective, accountability also entails aligning employees' behaviours and interests with the firms' sustainability objectives and identity claims (Sundin and Brown 2017; Johnstone 2019, 2022), often supported by managerial leadership (Maughan 2023). Creating synergies among controls—particularly, combining self-reinforcing monitoring and bonding mechanisms—can strengthen individual motivation and foster desired sustainability behaviours (Sundin and Brown 2017). For instance, combined evaluation and incentive systems empower employees and formalize the recognition of sustainability-oriented performances (Vieira et al. 2017; Johnstone 2019).

3.3 | The Integration Process

3.3.1 | Conceptual Dimension: Embedding Sustainability as a Value in MCSs (First Level)

The first level of integration refers to the embedding of sustainability principles within conventional MCSs. This conceptual dimension captures how sustainability as a value is infused into existing control structures.

A first research stream debates how sustainability values can be embedded in formal and informal controls (see Simons 1995; Malmi and Brown 2008) and how the resulting interactions of these mechanisms support sustainability management. Formal and informal controls play a pivotal role in mediating interactions with external actors. They prioritize stakeholder claims and address expectations through strategic intentions, organizational routines and PMSs (Durden 2008; Ghosh et al. 2019) but also support the management of potential conflicting demands (Adib et al. 2021; Spallek et al. 2023). Formal controls may act as 'domination' structures shaping top-down sustainability

behaviours (Chung and Parker 2008, 281) or as resource allocation systems guiding how diverse organizational domains generate sustainability value (Hosoda 2018).

Evidence on the relative relevance and interplay of these two mechanisms for sustainability purposes is mixed. Some studies suggest an exclusive reliance on formal controls to engage with external stakeholders (Adib et al. 2021), whereas others highlight the predominance of informal mechanisms within organizations that are less structured or strongly driven by internal sustainability values (e.g., Corsi and Arru 2021; Rehman et al. 2021; Derchi et al. 2023). Another stream, instead, emphasizes the importance of alignment and mutual reinforcement between formal and informal systems (Durden 2008; Walkiewicz et al. 2021). Informal controls, in particular, could provide a synergistic foundation and validation for formal mechanisms by creating and promoting a shared sustainability mindset (e.g., Hosoda and Suzuki 2015; Hosoda 2018; Laguir et al. 2019). Such attitude would indeed mitigate perceptions of formal systems as coercive and foster creativity and innovation as a consequence (Kurki and Järvenpää 2024).

A second research stream explores how control levers (Simons 1995) can be reconfigured to support sustainability management, particularly why sustainability values should be embedded in different control levers and how they interact. In general, when sustainability is embedded, the four levers remain interconnected and require periodic realignment to maintain internal coherence (e.g., Albertini 2019; Adib et al. 2021; Postaire et al. 2024). Yet, specific evidence on their individual and combined effects remains fragmented. For instance, belief and boundary systems can articulate a shared vision of sustainability and translate it into actionable objectives, whereas diagnostic systems support the internalization of stakeholders' demands (Albertini 2019; Walkiewicz et al. 2021). Also, diagnostic and interactive systems can enhance responsiveness and stimulate bottom-up sustainability initiatives (Arjaliès and Mundy 2013; Rodrigue et al. 2013), whereas belief systems support them in activating learning and innovation (Albertini 2019). Yet, contextual factors may weaken these synergies. When sustainability is pursued primarily for reputational purposes and conflicts with financial logics, weak normative mechanisms can limit the effectiveness of sustainability-oriented levers—particularly interactive and boundary systems—leading to the dominance of financially driven systems (Narayanan and Boyce 2019). In such cases, integration becomes symbolic for legitimization, rather than a substantial driver of managerial change (Gond et al. 2012; Narayanan and Boyce 2019).

Beyond control levers, several studies examine sustainability integration within PMSs, emphasizing the design of sustainability indicators as a key driver of integration (Ilinitch et al. 1998; Bonacchi and Rinaldi 2007; Hristov et al. 2022). Integrated PMSs support both monitoring and decision-making processes (Lisi 2015); they help defining financial goals and sustainability-driven competitive advantages (e.g., Chung and Parker 2008; Pryshlakivsky and Searcy 2017; Walkiewicz et al. 2021) and link sustainability achievements to incentive structures (Henri and Journeault 2010; Huber and Hirsch 2017; Sundin and Brown 2017). PMSs thus act as powerful drivers of sustainability strategy within the firm (Sundin and Brown 2017; Mikes and Metzner 2023), especially under strong top management commitment (Lisi 2018, 2015). Their influence may also extend across inter-organizational boundaries, enabling the assessment of sustainability performances throughout the supply chain actors (Ilinitch et al. 1998; Searcy 2016; Pryshlakivsky and Searcy 2017). However, some aspects of how PMSs are structured should be considered to make integration effective. It often requires redesigning both systems and metrics, redefining priorities across financial, sustainability and other dimensions (e.g., Bonacchi and Rinaldi 2007; Perego and Hartmann 2009; Sundin and Brown 2017). Also, using metrics that are standardized within the market can improve comparability of firms' sustainability performance and reduce development costs (Ilinitch et al. 1998; Perego and Hartmann 2009), but excessive aggregations may risk obscuring detailed insights (James 1994).

Finally, a smaller research stream focuses on the Balanced Scorecards (BSCs) as tools to link sustainability measures with financial outcomes and improve efficiency (Figge et al. 2002; Länsiluoto and Järvenpää 2008, 2010; Sharma and Sharma 2021). Although some authors argue that BSCs can foster a sustainability-oriented culture (Länsiluoto and Järvenpää 2010), a more 'pragmatic' stream (Baker et al. 2023) cautions that their effectiveness depends on contextual contingencies. Specifically, BSCs cannot instil sustainability values where these are not yet developed (Hansen and Schaltegger 2016, 2018). A contingency-based approach is therefore needed, adapting BSCs' design and use to the firms' maturity and cultural readiness.

3.3.2 | Conceptual Dimension: Overlap of SCSs and Conventional MCSs (Second Level)

The second level of integration concerns the overlap between systems; specifically, how SCSs are integrated into conventional MCSs. This perspective, introduced by Gond et al. (2012), conceptualizes integration as a socio-technical process with technical, organizational and cognitive dimensions. Technical integration occurs when MCSs and SCSs are interconnected within a broader control structure, sharing common infrastructures and calculative mechanisms. Organizational integration entails the implementation of formalized practices and overlapping individual roles, with management accountants and sustainability managers collaborating to coordinate tactical and operating activities. Cognitive integration, then, emerges over time through these interactions, which broaden the organizational understandings of sustainability as a cultural value and reshape the controlling mindset accordingly (see also Beusch et al. 2022; Derchi et al. 2023; Mikes and Metzner 2023). Compared to the first conceptual level of integration, this second level encapsulates the inherent complexity of integration as a process, particularly highlighting its multidimensionality (Johnstone 2019; Beusch et al. 2022). Moreover, these dimensions are shaped not only by internal technical and cognitive factors but also by the organization's interactions with external actors (Battaglia et al. 2016; Ditillo and Lisi 2016), resulting in an even broader range of integration choices.

First, the literature emphasizes that an effective integration process does not require involving all control structures, nor involving each of them with the same intensity (Journeault

et al. 2016). Instead, it should depend on the functional role of each structure. Gond et al. (2012) argue that integration mainly involves interactive and diagnostic structures, facilitating goal alignment, performance monitoring and eventual corrective actions (see also Derchi et al. 2023). Beusch et al. (2022) extend this view including also boundary and belief systems and highlighting the interactive role as crucial for validating sustainability actions through dialogue with external actors. Rötzel et al. (2019) propose an even broader view, considering integration as a combination of hard controls (e.g., reward and cybernetic systems), typically associated with MCSs, and soft controls (e.g., cultural and administrative mechanisms), tied to SCSs. Importantly, they also observe how certain controls may be less effective if the integration process takes place under certain conditions. For example, reward systems risk becoming even counterproductive in the presence of strong sustainability cultures, where intrinsic motivation already drives engagement (Lisi 2015; Rötzel et al. 2019). Conversely, administrative systems, although formally necessary, tend to be less effective when the integration process remains limited (Rötzel et al. 2019).

In general, MCSs and SCSs can contribute differently to integration (Johnstone 2019). MCSs are ontologically functionalist, relying primarily on formalized measurement systems to influence behaviours through hierarchical power mechanisms. By contrast, SCSs are socially constructed, emphasizing values through informal and interpretive mechanisms. Although this distinction allows flexibility, SCSs may risk becoming marginalized, perceived as abstract and peripheral, resulting in weaker commitment (Parker and Chung 2018).

Another key decision of the process concerns the degree of convergence between SCSs and MCSs, that is, how tightly the structures become connected (Gond et al. 2012; Beusch et al. 2022). When successful, convergence facilitates translating sustainability values into strategy and its operationalization through managerial actions (Rötzel et al. 2019). This outcome is achieved mainly when committed managerial roles connect strategic and tactical levels (Beusch et al. 2022), and integrative devices are used to coordinate them (Pérez et al. 2007; Ditillo and Lisi 2016). Effective integration also requires alignment between technological and human resources, particularly that actors accountable for control techniques and methods are also involved (and responsible for) their successful integration and implementation (Pérez et al. 2007; Cheffi et al. 2021).

Yet, empirical studies discuss that SCSs and MCSs may also operate in parallel, with limited or no integration (e.g., Rodrigue et al. 2013; Schaltegger and Burritt 2017). This is especially common when financial logics dominate, constraining strategy, decision-making and individual behaviours within economic boundaries (Durden 2008; Parker and Chung 2018; Narayanan and Boyce 2019). In such contexts, MCSs are dominant and centralized, whereas SCSs remain peripheral or symbolic (Durden 2008; Ditillo and Lisi 2016). Nevertheless, limited integration is not necessarily detrimental. A degree of separation can foster creativity and experimentation with alternative sustainability strategies, despite financial constraints (Parker and Chung 2018). Moreover, gradual integration might also be purposeful and strategically mobilized, allowing the process to evolve at a manageable pace and preventing organizational resistances to abrupt change (Lueg and Radlach 2016).

Finally, the organizational domains in which integration occurs further shape its scope and intensity. In general, integration achieved at the corporate level tends to cascade into subunits, reinforcing coherence across the organization (Sundin and Brown 2017). More precisely, the level of integration often depends on the alignment between business-unit strategies and the firm's sustainability orientation, as well as on the relative commitment of top and unit managers (Jansson et al. 2000). Indeed, the placement (or confinement) of SCSs within specific domains may reflect the strength of their profit orientation and the agency of managerial roles and may be purposeful rather than a symptom of failure (Parker and Chung 2018; Bouten and Hoozée 2022).

3.3.3 | Technical Dimension: Architectures Used for the Integration

Alongside the conceptual dimension of the process, analysing the possible 'architectures' of integration aims to clarify how the systems can be technically designed, mapping their alternative structures.

As a first design choice, organizations may either develop new systems *ex novo* or reconfigure existing control systems for sustainability purposes. In practice, firms more often adapt pre-existing structures (Lueg and Radlach 2016; Ghosh et al. 2019; Beusch et al. 2022), adjusting their scope, orientation, information flows, computations and their position relative to other management systems (Bui et al. 2024). One reason lies in the procedural legitimacy of established MCSs, which makes their adaptation more acceptable and less disruptive than the creation of new SCSs (Derchi et al. 2023; Maughan 2023). The former option may still generate internal tensions when sustainability introduces conflicting logics and new priorities among control mechanisms (Sundin and Brown 2017; Rötzel et al. 2019; Postaire et al. 2024). However, these conflicts should be addressed through organizational interactions—particularly re-prioritization processes—rather than by seeking full system congruency, which is unlikely under institutional complexity (Hahn et al. 2015; Hahn and Figge 2018).

Designing new controls *ex novo*, by contrast, has received limited attention in the literature and is less commonly operated. Bui et al. (2024) suggest focusing on the breadth and depth of measures adopted, on the overall structuring of the measurement system (targets in particular) and on the degree of connection with sustainability strategy. However, this option may increase the risk of decoupling between sustainability rhetoric and practice (Lueg and Radlach 2016).

A second design choice concerns the positioning of sustainability within the control architecture, that is, where sustainability information is located relative to non-sustainability contents. Scholars distinguish hierarchical and non-hierarchical structures, or connected and detached framings, particularly within the context of BSC (e.g., Figge et al. 2002; Ghosh et al. 2019; Rasolofo-Distler 2022).

Hansen and Schaltegger (2016, 2018) propose a continuum ranging from strictly hierarchical architectures—where strategic objectives are subordinate to financial performance—to flat, network-oriented structures, which treat sustainability as a peer objective (see also Ghosh et al. 2019). This choice does not reflect the 'goodness' of the system, but the organization's value orientation, as diverse framings guide managers differently (yet do not replace them) in strategizing and setting priorities. Flatter structures may suit more radical sustainability integration, whereas hierarchical structures may better support less pervasive and more adaptive approaches to sustainability (Hansen and Schaltegger 2016, 2018).

Regarding information placement, the literature offers mixed options. Sustainability can be embedded within the four traditional BSC perspectives or represented through an additional sustainability perspective (Vieira et al. 2017; Rasolofo-Distler 2022). Hansen and Schaltegger (2016) also suggest a hybrid model that combines these two approaches, whereas Länsiluoto and Järvenpää (2010) propose integration solely within the process perspective, emphasizing its causal link to financial objectives. Overall, the 'pragmatic' debate (Baker et al. 2023) agrees that system architecture should not be intended as a driver of radical change. Instead, it represents an enabling mechanism to support and reinforce different approaches to sustainability strategies, involving appropriate control and coordination framings (Hahn and Figge 2018; Hansen and Schaltegger 2018).

3.4 | Barriers

'Barriers' to integration identify boundary conditions that hinder the process, leading to its failure or limiting its effectiveness, thus prompting organizations to reconsider whether integration is (at least temporarily) appropriate. They can be technical, organizational or cognitive (Gond et al. 2012).

Technical barriers relate to the ineffective structuring of integrated mechanisms, especially from a design perspective. The literature identifies the lack of adequate technical infrastructures or capabilities to support integration as the most critical issue (Gond et al. 2012; Lisi 2015; Hristov et al. 2022). For instance, calculation-related challenges arise when MCSs are failing to link sustainability goals, performance indicators and salient stakeholders or when they do not clearly specify how targets can be achieved, making monitoring ambiguous (Durden 2008). The use of indicators that are difficult to compute or interpret (e.g., complex, aggregated, non-technical or qualitative) further undermines data effectiveness, limiting their usefulness for decision-making (James 1994; Lisi 2018; Derchi et al. 2023). Additional technical barriers include limited financial resources and time to design and implement the system (Ilinitch et al. 1998; Laguir et al. 2019), which can lead to fragmented or non-uniform systems across organizational domains (Jansson et al. 2000; Ditillo and Lisi 2016).

Cognitive barriers concern difficulties in understanding, interpreting and legitimizing the integration of sustainability within the organization. The first and most debated challenge is the lack of commitment and legitimacy of integration, often stemming from limited trust in its long-term economic potentials (Hristov et al. 2022). This attitude may result in weak internal support (Maughan 2023), limited top management sponsorship (Derchi et al. 2023) or misalignment between internal and external commitments to sustainability (Ditillo and Lisi 2016). According to Maughan (2023), internal legitimacy may gradually develop over time, as the systems' effectiveness becomes visible. Although scepticism towards SCSs may constrain this legitimizing effect only to MCSs, Länsiluoto and Järvenpää (2010) suggest that using calculations to explicitly demonstrate the financial benefits of sustainability initiatives may help reverse negative effects.

A second cognitive barrier concerns misunderstandings or limited knowledge regarding sustainability values and control systems. Ambiguity in the meanings of sustainability concepts can lead to misinterpretations by organizational members, especially when PMSs include subjective elements (Durden 2008; Hristov et al. 2022). An unclear cognitive framing can lead top managers to perceive sustainability management as particularly complex and ambiguous (Gond et al. 2012), particularly when priorities must be re-negotiated among competing goals (Durden 2008; Johnstone 2022). Such uncertainties can result in under-developed or fragmented systems (Ghosh et al. 2019), particularly when opportunities for dialogue and learning are limited (Gond et al. 2012), or when actors lack familiarity with control techniques involved in the integration (Derchi et al. 2023).

Finally, organizational barriers relate to difficulties in interactions among internal actors or organizational domains involved in integration. Particularly, imbalances in accountability across organizational roles and units (Ditillo and Lisi 2016) as well as uneven or non-purposeful cooperation among roles and functions (Länsiluoto and Järvenpää 2008) may hinder an effective integration process.

4 | Concluding Discussion

The integration of sustainability within MCSs has been discussed by the accounting literature as a 'socio-technical process', with development paths leading to diverse degrees of overlap between MCSs and SCSs and to varying controls configurations (Durden 2008; Gond et al. 2012; Beusch et al. 2022). However, the choice of integrating sustainability into controls may not always be effective, as the process presents many challenges discussed by the critical and pragmatic literature debates (Baker et al. 2023). For example, organizations may lack adequate control structures in place or may rely on controls that function better when separated rather than integrated (Milne 1996; Bouten and Hoozée 2022). Moreover, the integration process is challenged not only by control systems as such but also by contextual conditions (Ditillo and Lisi 2016). For instance, the actors involved may favour or hinder integration for different (sometimes conflicting) reasons (Hansen and Schaltegger 2016). This study connects these debates to understand more comprehensively the integration process, the influential actors as its antecedents and its barriers as boundary conditions.

4.1 | Theoretical Implications and Future Research Directions

Building on existing literature, we conceptualize integration as a multifaceted, non-linear process involving multiple layers of choices. First, focusing on the notion of 'integration', we extend the theorization of Gond et al. (2012) by distinguishing two conceptual levels of integration. The first concerns the extent to which sustainability is embedded within MCSs as a value, that is, how a principle (sustainability) is embedded into a system (control mechanism). From this perspective, we discuss how different types of MCSs—formal or informal and specific control levers (Simons 1995)—embed sustainability to varying degrees and how their interaction evolves after the introduction of sustainability. Different configurations can emerge depending on how and why organizations seek to internalize sustainability principles, leading to potential synergic effects. This may require adapting existing structures and reconsidering how performances are measured, particularly to re-prioritize and improve their interpretability after the introduction of social and environmental principles.

The second conceptual level refers to what Gond et al. (2012) describe as 'degree of overlap' between MCSs and SCSs (see also Rötzel et al. 2019; Beusch et al. 2022), namely, the extent to which SCSs are intertwined with (or remain separate from) conventional MCSs. This overlap is a result of how technical structures are interconnected, how actors within and outside the finance function cooperate and how the concept of sustainability becomes understood within the organization. MCSs and SCSs can play very different roles (functional vs. social), which shape their relevance and positioning in the emerging integrated system. As for the first integration level, the systems' overlap does not need to involve all control structures, nor uniformly across different mechanisms, but might concern only part of the system. Particularly, in some cases, SCSs and MCSs should be purposefully structured to operate in parallel, with limited or no integration (Bouten and Hoozée 2022). This option, therefore, should not be considered inferior to integration, or as a failure of the process, as it can also be more appropriate and functional for specific contexts and purposes (e.g., to foster creativity). Research should further deepen this understanding, clarifying when a lack of integration is functional, for what purposes and what control types should remain disconnected intentionally. Moreover, the two conceptual dimensions of integration are distinct, yet interrelated; future research could further explore their interplay and understand whether and how certain degrees of overlap are more conducive to particular configurations of sustainability-embedded MCSs. For example, certain configurations of integrated control packages might obviate the need for separate SCSs operating in parallel.

Third, we introduce a technical dimension alongside the conceptual levels. It particularly concerns decisions regarding systems' architecture, such as the degree of novelty, the level of elements' subordination and the alternatives for positioning sustainability relative to other contents (e.g., operational or financial goals and metrics) (e.g., Hansen and Schaltegger 2016, 2018; Lueg and Radlach 2016; Derchi et al. 2023).

In general, we propose to distinguish two types of choices when dealing with the complexity inherent in the integration process: conceptual decisions (whether and how to embed sustainability values and connect different control systems) and architectural decisions (how to technically design the system). However, we believe these choices may interact. For instance, organizations with structured controls already in place may achieve greater internal legitimacy if they use similar architectures to integrate sustainability; in turn, even when systems are developed separately, a higher degree of overlap between MCSs and SCSs may emerge. Therefore, we believe certain architectures may be more effective under certain structural preconditions and, in turn, may lead to particular control configurations, in conjunction with conceptual integration choices, beyond other strategic considerations (Hansen and Schaltegger 2016, 2018). Yet, the precise relationship between conceptual and technical decisions remains an open question, calling for further inquiry.

Fourth, we discuss how diverse internal and external actors—and the organization itself—influence the integration process, with collective or individual behaviours acting as key antecedents (e.g., Pérez et al. 2007; Dubey et al. 2017; Kurki and Järvenpää 2024). By unpacking the roles and purposes of these subjects, we contribute to a theoretical understanding of why integration occurs in the first place and how it can be then shaped in different directions (e.g., Länsiluoto and Järvenpää 2010; Schaltegger and Zvezdov 2015; Rasolofo-Distler 2022). Importantly, we show that such influences are not linear or isolated; rather, different behaviours can be intertwined and shape the process both directly and indirectly, creating combined and reinforcing effects. For instance, when institutional pressures arise, the internal strategic purpose becomes twofold: It responds to internal organizational needs for more sustainability-informed decision-making (e.g., Bartolomeo et al. 2000; Rehman et al. 2021) and strengthens the firm's legitimacy within its institutional context (Mikes and Metzner 2023; Cristofaro et al. 2024). Although our framework elucidates the relationships between actors and purposes guiding integration, future research could further explore these interconnections.

Finally, we propose three types of barriers that may arise before or during the integration process, acting as boundary conditions that challenge its success. We categorize them as technical, cognitive and organizational, following the classification introduced by Gond et al. (2012) to describe the main features of the integration process. We contribute to theory by articulating different causes that may render integration a complex and potentially ineffective choice, at least temporarily. Indeed, certain preconditions might be necessary when initializing the process to avoid turning it into a risky endeavour. Future research should distinguish between barriers that merely constrain integration—yet do not lead to failures—and those that might jeopardize the feasibility of the process.

Overall, we respond to Bebbington and Thomson (2013), asking for more connection between management accounting and sustainability literature streams, examining integration as a pivotal process characterized not only by a socio-technical dimension but also normative challenges that can undermine an effective sustainability transition. Our study thus provides a stronger connection between the critical and pragmatic debates of management accounting for sustainability (Baker et al. 2023).

4.2 | Practical and Political Implications

This study highlights several aspects that organizations should address internally to enhance the effectiveness of the integration process and that policymakers should consider to better steer organizations' sustainability behaviours through accountability requirements.

First, after analysing the complexity of the process, the emerging organizational challenges and the alternatives to integration, we can conclude that this process does not automatically translate into an effective and meaningful contribution to sustainability transition. For instance, when logic imbalances persist and the organization is mainly driven by financial objectives, integration risks becoming only a façade for symbolic legitimacy, rather than a driver of substantial change (Durden 2008; Narayanan and Boyce 2019). Therefore, policymakers should not presume that demanding accountability on sustainable development through harsh regulatory requirements is enough to influence the organizational mindset.

A deeper understanding of different strategic orientations and of how firms construct legitimacy through the use of these systems may help policymakers to identify and challenge façade behaviours.

Second, we offer insights into key decisions that organizations face throughout the process from a conceptual and technical perspective. We outline how MCSs packages can be configured, how formal and informal controls can complement each other and how MCSs and SCSs can be intertwined to pursue different objectives. Also, we suggest how different types of data can enhance the systems' informativeness and how sustainability information can be positioned relative to non-sustainability dimensions to prioritize it strategically. These insights could also guide policymakers by offering a broad array of directions when designing frameworks for sustainability measurement and accountability. For example, they can support a more informed selection, construction and positioning of sustainability metrics within broader frameworks, as well as the review of already proposed models, enhancing their comparability, credibility and informativeness.

Finally, we offer guidance on how and why different actors influence the integration process and outline specific roles that may emerge, for instance, the sponsorship role of managers, the intertwined contributions of accountants and non-accountants, individuals acting as 'gatekeepers' and 'boundary spanners' (Schaltegger and Zvezdov 2015). Organizations can thereby address the emergence of different roles, understand how they are shaping the integration process and provide timely coordination to foster effective interactions.

4.3 | Limitations

This study is not without limitations. First, we relied on Scopus as the sole database for the initial identification of articles, which might have led to the exclusion of other studies indexed elsewhere. Second, the application of stringent quality criteria resulted in the omission of certain types of sources not subjected to anonymized peer reviews or rigorous editorial control—such as book chapters or conference proceedings—that might nonetheless have offered relevant insights. Together, these two methodological decisions may have led to the omission of some evidence concerning the integration process. However, the choice of using Scopus (the most comprehensive database available according to Waltman 2016), combined with the manual inclusion of additional authoritative studies through citation tracking, enhanced the overall coverage of the sample while ensuring alignment with the research objectives and maintaining a high level of methodological rigour.

Author Contributions

Anna Lucia Missaglia: conceptualization, investigation, writing – original draft, writing – review and editing, data curation, project administration, visualization, methodology, supervision. **Valentina Minutiello:** conceptualization, investigation, methodology, writing – review and editing. **Andrea Urbinati:** conceptualization, writing – review and editing, methodology, visualization. **Patrizia Tettamanzi:** supervision, writing – review and editing.

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Conflicts of Interest

The authors declare no conflicts of interest.

Endnotes

[1] We debate PMSs—a specific subsystem of MCSs (see also Simons 1995; Malmi and Brown 2008)—following the definition of Franco-Santos et al. (2012, 80), that is, 'systems of financial and non-financial performance measures used to operationalize strategic objectives [...] to evaluate performance for informational or motivational purposes'.

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