www.etimm.ase.ro

Towards the Sustainable Organization: Challenges and Barriers to Sustainability Integration

Marjan ENTEKHABI
The "Lucian Blaga" University of Sibiu
marjan.entekhabi@ulbsibiu.ro

Article history
Received 28 April 2025 | Accepted 18 September 2025 | Published online 29 September 2025.

Abstract
This integrative review explores primary barriers to embedding sustainability in organizational operations globally and proposes practical solutions to advance sustainable practices. It identifies key challenges and effective strategies across diverse organizational contexts. The review synthesizes insights from scholarly sources, including peer-reviewed journal articles, books, and reports, primarily sourced from databases such as Scopus, Web of Science, and JSTOR, spanning the years 2000 to 2023. Using thematic analysis, it highlights ten critical barriers: resistance to change, resource limitations, measurement challenges, insufficient leadership commitment, short-term financial priorities, unclear metrics, regulatory complexities, supply chain intricacies, limited consumer demand, and lack of expertise. Findings indicate that fragmented regulations require proactive transparency, internal resistance demands robust communication and training, supply chain issues need advanced technologies and collaborative supplier relationships, and consumer demand benefits from education and certifications. Strategic partnerships, phased implementation, and targeted training address resource and expertise gaps, while standardized frameworks and enhanced data systems overcome measurement difficulties. The review offers a conceptual model linking barriers, impacts, and solutions, recommending stakeholder engagement, analytics investment, and adoption of frameworks like the Triple Bottom Line and SDGs. This study enriches understanding of sustainability integration by clarifying obstacles and providing actionable guidance for organizations pursuing sustainable outcomes.

Keywords: Sustainability Integration, Organizational Barriers, Sustainable Leadership, Supply Chain Sustainability, Strategic Frameworks.

JEL classification: Q01, Q56, L21, M14, M16.

Introduction

In today's rapidly evolving business landscape, organizations across all sectors are under increasing pressure to integrate sustainability into their core operations. This push comes not just from tightening regulations, but also from rising expectations among customers, investors, and other stakeholders (Niinimäki et al., 2020; Seuring & Gold, 2013). Despite the urgency, much of the current research tends to focus narrowly, often examining sustainability in specific industries, such as healthcare or manufacturing. As a result, we still lack a clear understanding of the broader, cross-sector challenges that make sustainable integration so difficult (de Oliveira et al., 2023).

Some studies have begun to shed light on these obstacles. For instance, de Oliveira et al.(2023) point to persistent misconceptions among senior leaders and outdated technologies as common barriers. Adams et al. (2008) take it a step further by categorizing these barriers into strategic, operational, and cultural categories that transcend industry lines. Still, what's missing is a unified framework that brings these findings together in a way that organizations across the globe can use.

This paper aims to fill that gap. It asks two key questions: (1) What are the main challenges organizations face when trying to embed sustainability into their everyday

operations? and (2) What strategies and conceptual models have proven effective in addressing these challenges?

To answer these, the study conducts an integrative review of literature from business, environmental, and social science fields—including peer-reviewed articles, reputable reports, and books. By bringing together insights from across disciplines, industries, and regions, the goal is to offer a clear and practical synthesis of both the barriers and the solutions to sustainable integration. That said, the review focuses solely on English-language sources and literature available as of December 2023. This may limit the scope of some findings, particularly those emerging after this date or in non-English contexts, as discussed further in the methodology section.

Building on earlier research that tends to focus on specific sectors or regions (e.g., de Oliveira et al., 2023), this study offers a broader contribution by introducing a new conceptual model. Unlike previous work, the model connects common sustainability barriers to their organizational consequences and aligns them with targeted strategic responses. In doing so, it provides practical insights that go beyond what sector-specific studies have typically emphasized.

The paper is structured as follows: Section 2 describes the integrative review methodology, including the literature search, selection criteria, and thematic analysis. Section 3 presents the core findings, examining key challenges such as lack of leadership commitment, difficulties in measuring sustainability outcomes, limited resources, organizational resistance to change, and complex regulatory environments. Section 3.11 introduces the proposed conceptual model, which integrates these elements into a unified framework.

Section 4 then assesses leading sustainability frameworks—including the Triple Bottom Line, the Sustainable Development Goals, the Circular Economy model, and reporting standards such as GRI and SASB—through the lens of the identified barriers. Section 5 summarizes the findings in a consolidated table of challenges and responses. Finally, Section 6 concludes with key implications, limitations, and suggestions for future research, offering a strategic roadmap for organizations seeking to embed sustainability into their core operations.

1. Methodology

This study employs an integrative review approach to examine the barriers and strategies involved in embedding sustainability within organizational practices, with a particular focus on the experiences of small and medium-sized enterprises (SMEs). Drawing on a wide range of sources—including empirical research, theoretical contributions, and practitioner-oriented literature—the review follows the framework developed by Whittemore and Knafl (2005), a widely adopted model for conducting comprehensive and methodologically sound integrative reviews.

The process began with the formulation of research questions centered on the key obstacles organizations face in sustainability integration and the strategies available to address them. Guided by these questions, the review proceeded through a structured yet flexible series of steps designed to build a robust evidence base while allowing for the inclusion of diverse perspectives.

A systematic literature search was conducted across four major academic databases—Scopus, Web of Science, JSTOR, and Sage Journals—between June and August 2023, with an update in December 2023 to include the most recent developments in this rapidly evolving field. Search queries utilized combinations of keywords, such as “organizational sustainability,” “sustainability integration,” “barriers,” “challenges,” “strategies,” and “frameworks,” connected by Boolean operators (e.g., *AND, OR*). Results were limited to English-language publications from 2000 to 2023.

To ensure a broad and balanced perspective, peer-reviewed journal articles were complemented by books, book chapters, and reputable reports from recognized organizations, such as the United Nations. Additional sources were identified through manual reference checks and expert recommendations. The review prioritized sources with a cross-sectoral or organizational-level focus on sustainability integration, and excluded those narrowly confined to a single industry or geographic region. While this approach supports generalizability, it may omit context-specific insights. Non-English works and unauthored grey literature were also excluded to maintain quality and consistency.

Each selected source was appraised using the 2018 version of the Mixed Methods Appraisal Tool (MMAT) (Hong et al., 2018), which is suitable for assessing the quality of qualitative, quantitative, and mixed-methods studies. Only sources meeting at least 80% of the MMAT criteria were included in the final analysis. Approximately 15% of initially reviewed materials were excluded based on this quality threshold.

Data were extracted using a structured template capturing bibliographic details, methodological approach, identified barriers, strategic responses, and key insights. Special emphasis was placed on sustainability challenges specific to SMEs, including limited financial and human resources, as well as gaps in leadership engagement. These issues informed the subsequent thematic analysis, conducted using Braun and Clarke's (2006) iterative process. The analysis began with the initial coding of data related to barriers and strategies, which were then organized into thematic categories, such as leadership, measurement, and supply chain complexity. Themes were refined through repeated comparisons across studies until thematic saturation was reached. Relevance to the core research questions, particularly in relation to SMEs, was validated throughout.

The findings from this analysis were used to construct a conceptual framework (Figure 1), which maps out the relationship between common sustainability barriers, their organizational impacts, and potential strategic responses. This model was developed in alignment with Whittemore and Knafl's (2005) framework and also integrates insights from a supplementary review of developments after December 2023. These additions strengthened the model's adaptability to evolving regulatory contexts, particularly through the incorporation of a resilience feedback loop.

Several limitations of the methodology are acknowledged. The decision to exclude sector-specific studies and non-English sources may have led to the omission of valuable contextual insights. While the inclusion of organizational reports added practical relevance, it introduced variability in the types of sources. Furthermore, although inter-rater reliability was high, formal metrics were calculated retrospectively. The literature cutoff in December 2023 may also exclude emerging studies from early 2024; however, an informal update suggests that these are unlikely to alter the core conclusions.

Despite these constraints, the methodology provides a rigorous and transparent foundation for exploring the integration of sustainability across sectors. It supports the paper's focus on SMEs while contributing to a broader understanding of how organizations can effectively integrate sustainability into their strategy and practices.

2. Results and Discussion

The study identified ten interconnected barriers to sustainability integration, grouped into internal, resource-related, and external or operational categories. Each set of barriers carries distinct implications for organizations and is linked to actionable strategies. Taken together, these insights offer a comprehensive understanding of the challenges and potential responses relevant to embedding sustainability, particularly in resource-constrained settings such as small

and medium-sized enterprises (SMEs). The findings are based on a robust analysis of diverse sources, reflecting patterns that extend across sectors.

Internally, a lack of leadership commitment, resistance to change, and insufficient knowledge or expertise often prevent sustainability from gaining traction. When executive-level support is absent, efforts tend to be fragmented, and organizations may fall into a pattern of inertia, where employees default to established practices. This is particularly evident in environments where transformational leadership is lacking (Boeske, 2022; Avery & Bergsteiner, 2011). For example, a mid-sized retailer struggled to advance early sustainability initiatives until leadership training was implemented, resulting in renewed strategic alignment (Liao, 2022). Employee skepticism—often a result of unclear communication or uncertainty about goals—can also stall innovation. This challenge is more acute for SMEs, which frequently lack in-house sustainability expertise (Kotter & Schlesinger, 1979; Ford et al., 2008; Martins et al., 2022). Addressing these issues involves embedding sustainability into leadership performance indicators, offering targeted training programs (such as Unilever's sustainability leadership initiatives), promoting transparent communication, and involving employees in the decision-making process. Partnerships with academic institutions or non-governmental organizations (NGOs) can also help bridge capacity gaps and build organizational knowledge (OECD, 2022). These interventions collectively foster commitment, reduce resistance, and align sustainability objectives with broader organizational goals.

Resource constraints represent another major barrier. Many organizations—especially SMEs—operate under tight financial conditions and prioritize short-term returns. In such contexts, sustainability is often viewed as a cost with delayed or uncertain return on investment. This perception is compounded by limited access to capital, high borrowing costs, and a lack of available personnel (Vaquerizo & Kiss, 2023). For instance, one small manufacturing firm postponed investments in eco-efficient upgrades until it could access phased funding support (Kuzmanović, 2022). Several strategies have proven effective in overcoming these financial hurdles. Lifecycle cost analysis can help shift the focus from upfront costs to long-term value. Sustainability-linked loans, such as those used by Philips, offer a way to finance sustainability investments over time. Phased implementation enables organizations to adopt changes incrementally, thereby spreading the financial burden. In addition, resource-sharing models—such as SME consortia—enable smaller firms to collaborate and pool limited resources, making sustainability initiatives more feasible without overextending capacity (OECD, 2022).

Externally, organizations face a range of systemic barriers that complicate the integration of sustainability into operations. Key challenges include fragmented sustainability metrics, regulatory complexity, supply chain limitations, weak consumer demand, and persistent measurement difficulties. Inconsistent or incompatible metrics can undermine both internal monitoring and external credibility, especially for SMEs that may be unfamiliar with established reporting frameworks such as the Global Reporting Initiative (GRI) or the Sustainability Accounting Standards Board (SASB). One small retailer, for example, struggled to establish reliable data systems due to this lack of familiarity (de Villiers et al., 2022; Abdel-Gawwad, Rashad and Heikal, 2019). Regulatory complexity also presents a considerable hurdle, particularly as policies evolve rapidly. The European Union's Corporate Sustainability Reporting Directive (CSRD), while aimed at improving transparency, has increased compliance costs for many firms. However, some mid-sized companies have managed this burden more effectively by engaging early with policymakers and adapting their internal systems accordingly (Aguilera et al., 2021).

Supply chain transparency is another significant concern, particularly for SMEs that lack the necessary digital tools to track upstream and downstream activities. Global supply chains often operate with limited visibility, making it difficult to identify sustainability risks or

validate supplier practices. At the same time, limited consumer demand—especially when customers are unwilling to pay a premium for sustainable products—can deter organizations from making long-term investments. This is particularly evident in sectors like fashion, where a gap often exists between consumer values and purchasing behavior (Saberi et al., 2019; Busse et al., 2017; McNeill and Moore, 2015; Niinimäki et al., 2020). Measuring progress also remains a persistent challenge. For instance, Scope 3 emissions—indirect emissions across the value chain—are notoriously difficult to assess, particularly for organizations lacking technical expertise or access to data (de Villiers et al., 2022).

Despite these obstacles, several strategies have shown promise. Simplified versions of GRI or SASB frameworks can help SMEs begin reporting without becoming overwhelmed, while environmental, social, and governance (ESG) software platforms can streamline data collection and analysis. Engaging third-party assurance providers also enhances credibility and transparency. On the regulatory front, voluntary disclosures and proactive engagement with policy developments allow firms to stay ahead of compliance requirements. Technological innovations, such as blockchain—exemplified by IBM's Food Trust—can enhance supply chain traceability, while partnerships with suppliers can foster shared sustainability goals. To address the consumer demand gap, clear ecolabels (such as Fair-Trade certifications), supported by targeted marketing campaigns, have proven effective in building trust and communicating value (White et al., 2019).

These external challenges, if unaddressed, can lead to inconsistent performance tracking, inflated operational costs, and strategic misalignment. However, the solutions outlined above—ranging from leadership development and innovative financing to standardized metrics and cross-sector collaboration—offer a practical path forward. These approaches align with the sustainability frameworks discussed in Section 4, including the Triple Bottom Line (TBL), which emphasizes balanced performance across social, environmental, and financial dimensions (Elkington, 1997); the Sustainable Development Goals (SDGs), which promote inclusive stakeholder engagement (United Nations General Assembly, 2015); and the Circular Economy model, which prioritizes resource efficiency and system-level redesign (MacArthur, 2013). Together, these frameworks and strategies support long-term value creation, helping organizations overcome systemic barriers to sustainability. The full set of barriers and responses is synthesized in the conceptual model presented in Section 3.11, offering a structured foundation for further analysis.

2.1. Conceptual model

Figure 1 presents the study's conceptual model, which synthesizes the key findings by linking the identified barriers to their organizational impacts and corresponding strategic solutions for sustainability integration. This model is grounded in the thematic analysis outlined in Section 2, where themes were developed through an iterative process of coding, categorizing, and comparing findings across sources until saturation was reached. The result is a structure that aligns closely with the study's research questions and offers practical relevance, particularly for small and medium-sized enterprises (SMEs) navigating resource limitations.

The model is structured in three parts. On the left, it outlines the barriers to sustainability integration, categorized as internal, resource-related, and external/operational. In the center, it illustrates the organizational impacts of these barriers. On the right, it outlines strategic responses that address these challenges in a manner that is both feasible and scalable for SMEs.

Internal barriers—such as limited leadership commitment, resistance to change, and insufficient knowledge—often result in poor prioritization and organizational inertia. In such contexts, efforts to shift away from established practices can stall (Alayón, Säfsten and Johansson, 2022). Resource-related challenges, including a focus on short-term returns and

financial or personnel constraints, contribute to delays in implementing sustainability initiatives due to concerns about delayed returns on investment (Vaquerizo & Kiss, 2023; George et al., 2016). External and operational barriers, including unclear or inconsistent metrics, regulatory complexity, supply chain limitations, weak consumer demand, and measurement challenges, lead to ineffective performance tracking, rising compliance costs, and misalignment between sustainability goals and broader organizational strategies (de Villiers et al., 2022; Grant et al., 2023). For example, inconsistent metrics can undermine stakeholder confidence, while weak consumer demand reinforces short-term thinking (Zhu et al., 2022).

The strategic responses outlined in the model directly address these impacts, with a particular focus on solutions that are realistic for SMEs. In response to internal barriers, leadership development, change management, and external partnerships are essential. Training programs and integrating sustainability into leadership KPIs can foster stronger executive commitment, especially in SMEs with limited leadership capacity (Engert et al., 2016). Transparent internal communication and staff engagement help reduce resistance, while partnerships with NGOs or academic institutions can fill knowledge gaps, as seen in collaborative supply chain initiatives (Grant et al., 2023).

To address resource constraints, innovative financing mechanisms—such as green bonds and sustainability-linked loans—can help spread out costs and make the long-term benefits of sustainability investments more visible. Phased implementation plans also make these investments more manageable, a strategy that has proven effective in SME contexts, including in adaptations of models like Unilever's sustainability-linked loans (Seuring & Müller, 2008).

External and operational barriers can be mitigated through the use of standardized frameworks, such as GRI and SASB, which enhance comparability and reduce reporting burdens. Third-party assurance further enhances credibility, and proactive regulatory engagement helps firms anticipate compliance demands (de Villiers et al., 2022; Aguilera et al., 2021). Technological tools such as blockchain platforms (e.g., IBM's Food Trust) improve supply chain visibility, while supplier partnerships build resilience. Meanwhile, clear ecolabels, supported by targeted marketing campaigns, can help bridge the consumer demand gap in ways that are financially accessible to SMEs (McNeill and Moore, 2015).

This conceptual model is closely linked to the strategic frameworks discussed in Section 4. Leadership development aligns with the principles of the Triple Bottom Line (TBL), supporting balanced performance across financial, environmental, and social dimensions (Elkington, 1997; Dyllick & Hockerts, 2002). Standardized metrics support alignment with GRI and SASB standards, while partnerships with NGOs and academic institutions reinforce progress toward the Sustainable Development Goals (SDGs). Supply chain solutions, including circular approaches and waste reduction strategies, advance Circular Economy principles and offer scalable implementation paths for SMEs (Van Zanten & Van Tulder, 2018; D'Amato & Korhonen, 2021). Finally, the model includes a feedback loop to reflect the adaptive nature of sustainability strategies.

In sum, the model offers a structured and practical roadmap for overcoming the key barriers to sustainability integration. It aligns with widely adopted strategic frameworks and supports resilient, long-term value creation—particularly for SMEs seeking to embed sustainability into their core operations.

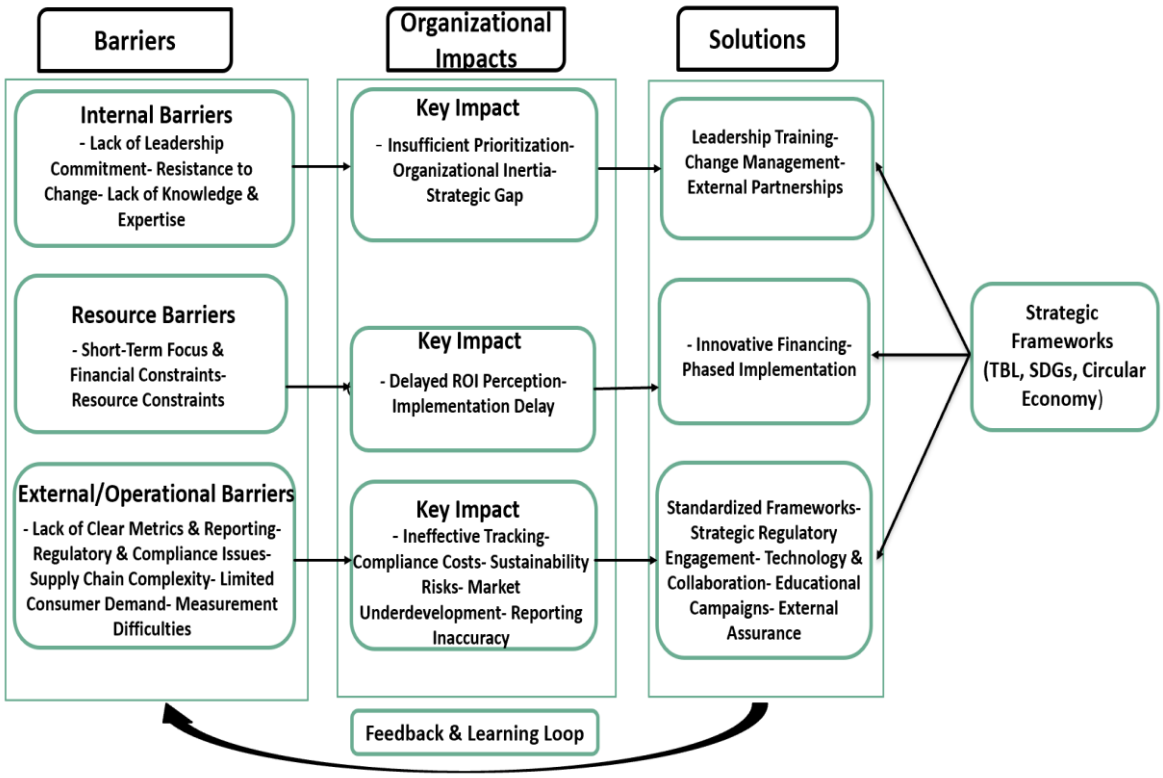

Figure 1. Conceptual Model Linking Barriers, Organizational Impacts, and Strategic Solutions for Sustainability Integration.

3. Strategic Frameworks for Sustainability Integration

Successfully embedding sustainability into organizational practices requires more than a series of isolated efforts. It calls for cohesive frameworks that align internal capacities with external expectations, helping organizations navigate the kinds of barriers identified in Section 3—such as leadership gaps, inconsistent metrics, financial constraints, and complex supply chains. These frameworks serve as practical tools for translating sustainability goals into action, while fostering resilience, building stakeholder trust, and supporting the creation of long-term value. This is especially critical for small and medium-sized enterprises (SMEs), which often face more acute resource limitations (Lozano, 2015; Bocken et al., 2014).

This section evaluates five widely used frameworks: the Triple Bottom Line (TBL), the United Nations Sustainable Development Goals (SDGs), the Circular Economy (CE), Natural Capital Accounting, and sustainability reporting standards, including GRI, SASB, and ISO 14001. Each is considered in terms of its benefits, limitations, and suitability for SMEs seeking to integrate sustainability more systematically.

The **Triple Bottom Line (TBL)** framework, introduced by Elkington (1997), promotes a balance between economic, environmental, and social outcomes. It offers a flexible foundation for organizations aiming to pursue sustainability holistically. Companies like Interface Carpets have effectively implemented TBL by setting measurable targets—such as zero carbon emissions—alongside financial performance goals, illustrating the framework's potential for practical application (Lozano, 2015). However, its broad conceptual scope can pose implementation challenges, particularly for SMEs. Without clearly defined metrics embedded in KPIs and budget processes, TBL risks being applied superficially (Norman & MacDonald, 2004; Epstein & Roy, 2001). Some SMEs have responded by simplifying their approach: one small textile company, for instance, developed a basic TBL dashboard and assigned executive accountability to ensure meaningful and transparent reporting. This allowed

the company to communicate its sustainability narrative effectively while avoiding complexity that might overwhelm internal capacity.

The **United Nations Sustainable Development Goals (SDGs)**, launched in 2015, offer a globally recognized set of 17 interconnected objectives spanning environmental, economic, and social dimensions (United Nations General Assembly, 2015). These goals enhance credibility in stakeholder engagement and are increasingly used as a reference point in sustainability reporting. However, the SDGs' breadth can be daunting—especially for SMEs with limited resources (Nygaard, Kokholm and Huulgaard, 2022). In practice, selective alignment has proven to be a viable approach. One small retailer, for example, focused on SDG 12 (responsible consumption and production) by sourcing sustainable materials. The company also partnered with local organizations and adopted GRI-compatible indicators, allowing it to contribute meaningfully without spreading its resources too thin (Van Zanten & Van Tulder, 2018). This case illustrates how SMEs can prioritize goals most relevant to their operations, using strategic focus and external partnerships to scale their sustainability efforts over time.

The **Circular Economy (CE)** framework emphasizes resource efficiency by promoting closed-loop systems of design, reuse, and recycling. While initially centered in manufacturing, CE principles are increasingly being adopted across a range of industries (MacArthur, 2013). One notable example is Philips' lighting-as-a-service model, where lighting systems are leased rather than sold, reducing material waste and extending product life cycles (Geissdoerfer et al., 2017). However, the transition to circular models often involves high upfront costs and requires restructured supply chains—factors that present significant barriers for small and medium-sized enterprises (SMEs). For instance, a small electronics firm faced challenges scaling its CE initiatives due to a lack of supporting infrastructure until it joined a CE100 consortium, which facilitated access to shared resources and collaborative learning (Kirchherr et al., 2018). For SMEs, top-down commitment, cross-functional coordination, and government incentives can help offset transition costs; however, questions of scalability remain, often necessitating sustained institutional and financial support.

Natural Capital Accounting (NCA) offers another valuable framework by integrating ecosystem services—such as water purification, soil fertility, and biodiversity—into organizational decision-making processes. This approach is particularly relevant in sectors like agriculture, forestry, and resource management (Costanza et al., 1997; TEEB, 2010). Companies such as Nestlé have used NCA to assess the environmental impact of water usage, linking these insights to their broader risk management strategies (TEEB, 2010). However, the data-intensive nature of NCA poses challenges for SMEs, which often lack the technical expertise and capacity to implement such tools independently (Hörisch et al., 2014). In one example, a small agricultural cooperative partnered with a university consultant to conduct scenario analyses that translated environmental risks into financial terms, making the approach more accessible and feasible despite limited internal resources.

Reporting frameworks, including the Global Reporting Initiative (GRI), Sustainability Accounting Standards Board (SASB), and ISO 14001, play a critical role in enabling transparent and comparable assessments of sustainability performance (Adams & Frost, 2008; Schaltegger & Burritt, 2014). Each serves a distinct purpose: GRI supports broad stakeholder reporting, SASB emphasizes financially material information for investors, and ISO 14001 offers a standardized approach to environmental management systems. For example, a small manufacturer used ISO 14001 certification to demonstrate its commitment to environmentally responsible practices, thereby enhancing its market credibility. Similarly, a mid-sized retailer adopted simplified GRI templates to meet early-stage reporting needs, providing a foundation for more comprehensive disclosures over time (Testa et al., 2014). With the implementation of the EU's Corporate Sustainability Reporting Directive (CSRD) set to begin in 2024, reporting

demands are expected to increase significantly. While these requirements may strain resource-limited SMEs, recent research suggests that early adopters who engage external support—such as consultants or industry alliances—are better positioned to meet compliance expectations (Castilla-Polo and Guerrero-Baena, 2023). Embedding these reporting tools into governance structures not only ensures accountability but also strengthens the integration of sustainability into core operations. However, ongoing guidance may be necessary for SMEs to navigate the complexity of evolving regulatory standards.

When adapted to fit organizational contexts, these frameworks can directly address the types of barriers outlined in Section 3. They offer structured pathways for SMEs and larger firms alike to align sustainability goals with strategic objectives, even in the face of financial or regulatory constraints. In doing so, they bring to life the solutions presented in Section 3.11—such as leadership development, innovative financing, and standardized metrics—reinforcing a cohesive and practical approach to sustainability integration.

4. Summary of Challenges and Solutions

This section summarizes the key barriers to sustainability integration, their organizational impacts, and corresponding solutions, as outlined in Table 1. Drawing from the conceptual model in Section 3.11, the table groups ten barriers into internal, resource, and external/operational categories, paired with practical, evidence-based strategies. Tailored especially for small and medium-sized enterprises (SMEs), the table offers a concise reference for applying the model across various organizational contexts. It complements the triadic structure by translating complex findings into actionable guidance.

Table 1. Summary of Barriers and Solutions in Sustainability Integration

Barrier	Description	Recommended Solutions	Key References
Lack of Leadership Commitment	Absence of strategic vision, resource allocation, and cultural support for sustainability.	Embed sustainability in mission; train leaders in systems thinking (e.g., Unilever's leadership programs); link KPIs to ESG goals; establish sustainability committees.	Lozano (2015); Avery & Bergsteiner (2011); Liao (2022); Bansal & Roth (2000)
Short-Term Focus & Financial Constraints	Pressure for immediate returns discourages long-term sustainability investments, especially in SMEs.	Highlight long-term ROI via lifecycle cost assessments; secure green financing (e.g., Philips' sustainability-linked loans); integrate ESG into executive incentives; use phased plans.	Hahn et al. (2010); Flammer (2015); George et al. (2016); Tumpa et al. (2019)
Lack of Clear Metrics & Reporting	Absence of standardized indicators limits monitoring, benchmarking, and stakeholder communication.	Implement GRI/SASB frameworks (e.g., simplified templates for SMEs); improve data systems; engage stakeholders in metric development; conduct third-party audits.	Adams & Frost (2008); Schaltegger & Burritt (2014); Epstein & Roy (2001); de Villiers et al. (2022)
Regulatory and Compliance Complexity	Varying national and international standards (e.g., EU CSRD) increase costs and compliance burdens.	Exceed minimum compliance; participate in policy discussions (e.g., a mid-sized firm's engagement with EU regulators); voluntarily disclose	Delmas & Toffel (2008); Kolk (2005); Hoffman (2005); Aguilera et al. (2021)

		performance; build internal regulatory capacity.	
Resistance to Change	Employee skepticism, entrenched habits, and lack of awareness undermine implementation.	Communicate purpose; offer role-specific training; empower change agents; reward sustainable behaviors (e.g., incentive programs at a small retailer).	Kotter (1995); Armenakis & Harris (2002); Ford et al. (2008); Hargreaves (2011)
Supply Chain Complexity	Lack of visibility and capacity in global supply chains prevents enforcement of standards.	Use traceability tools (e.g., blockchain, as in IBM's Food Trust); conduct supplier audits; co-develop sustainability training; foster industry collaboration.	Seuring & Müller (2008); Carter & Rogers (2008); Saberi et al. (2019); Bai & Sarkis (2010)
Limited Consumer Demand	High prices, confusion over green claims, and the intention–action gap suppress sustainable consumption.	Reframe product value; launch awareness campaigns; use credible certifications (e.g., Fair Trade labels by a small organic brand); collaborate with NGOs and influencers.	Peattie & Crane (2005); Devinney et al. (2010); White et al. (2019); Gleim et al. (2013)
Lack of Knowledge and Expertise	Insufficient internal capabilities to operationalize sustainability strategies.	Conduct targeted training; hire sustainability experts; partner with universities/NGOs (e.g., academic collaborations for a small firm); create knowledge-sharing systems.	Wiek et al. (2011); Hörisch et al. (2014); Glavič & Lukman (2007)
Resource Constraints	Limited financial, human, and technological resources delay implementation.	Access impact investing; adopt phased strategies; form cost-sharing partnerships (e.g., SME consortia); leverage external expertise.	Hillary (2017); Jenkins (2009); Nidumolu et al. (2009); Bansal (2005)
Measurement Difficulties	Sustainability's complexity complicates data collection, impact assessment, and benchmarking.	Standardize metrics with GRI/SASB; invest in integrated data systems; use third-party validation; engage in industry dialogue for benchmarking.	Bui & de Villiers (2017); Adams & Frost (2008); Hess (2008)

Note: Sources: See Reference List for full details

Conclusions

This study provides a comprehensive synthesis of the primary barriers organizations encounter when integrating sustainability into their operations, along with effective strategies and frameworks to address them—particularly for small and medium-sized enterprises (SMEs). Drawing on a wide range of academic and practitioner sources up to December 2023, and incorporating post-2023 developments such as the EU's Corporate Sustainability Reporting Directive (CSRD), the research identifies ten interconnected barriers. These span internal challenges (e.g., limited leadership commitment), resource constraints (e.g., financial pressures), and external factors (e.g., regulatory complexity and supply chain issues). These insights are consolidated into a triadic conceptual model (Figure 1), which links barriers to impacts and provides tailored solutions.

The strategic frameworks examined—Triple Bottom Line (TBL), Sustainable Development Goals (SDGs), Circular Economy (CE), Natural Capital Accounting, and

reporting standards (GRI, SASB, ISO 14001)—demonstrate clear value when adapted to SME contexts. Practical examples, including Unilever's leadership programs, Philips' green financing, and IBM's blockchain tools, highlight how these frameworks can be applied effectively. The summary table provides a concise tool for applying these insights in practice.

This work has several implications. For organizations, the model and frameworks offer a structured roadmap to align sustainability with business strategy. For policymakers, the findings suggest areas for targeted support, such as SME training programs or incentives to foster collaboration. Academically, the study contributes to sustainability literature by integrating cross-sectoral findings and highlighting the need for flexible, resource-aware strategies.

Nonetheless, limitations remain. The focus on English-language sources and the December 2023 cutoff may exclude recent or region-specific developments, especially in non-Western contexts. While excluding sector-specific studies improves generalizability, it may also overlook industry-specific insights. Additionally, the use of vetted organizational reports introduces some variability, though efforts were made to ensure quality through rigorous appraisal.

Future research could extend this work by incorporating newer data, non-English sources, and longitudinal case studies, particularly in emerging markets. Further exploration of digital tools and the scalability of circular models would help refine and expand the conceptual framework. With regulatory landscapes evolving, ongoing inquiry will be essential to keep sustainability strategies aligned with real-world dynamics.

References

Abdel-Gawwad, H.A., Rashad, A.M. and Heikal, M. (2019) 'Sustainable utilization of pretreated concrete waste in the production of one-part alkali-activated cement,' Journal of Cleaner Production, 232, pp. 318–328. https://doi.org/10.1016/j.jclepro.2019.05.356.

Adams, C. A. and Frost, G. R. (2008) 'Integrating sustainability reporting into management practices', *Accounting Forum*, 32(4), pp. 288–302. doi: 10.1016/j.accfor.2008.05.002.

Aguilera, R. V., Marano, V. and Haxhi, I. (2021) 'International corporate governance: A review and opportunities for future research', *Journal of International Business Studies*, 52(4), pp. 457–498. doi: 10.1057/s41267-021-00422-6.

Alayón, C.L., Säfsten, K. and Johansson, G., 2022**.** Barriers and enablers for the adoption of sustainable manufacturing by manufacturing SMEs. *Sustainability*, 14(4), article 2364. doi:10.3390/su14042364

Armenakis, A. A. and Harris, S. G. (2002) 'Crafting a change message to create transformational readiness', *Journal of Organizational Change Management*, 15(2), pp. 169–183. doi: 10.1108/09534810210423080.

Avery, G., & Bergsteiner, H. (2011). Sustainable Leadership: Honeybee and Locust Approaches (1st ed.). Routledge. https://doi.org/10.4324/9780203723944

Bai, C. and Sarkis, J. (2010) 'Integrating sustainability into supplier selection with grey system and rough set methodologies', *International Journal of Production Economics*, 124(1), pp. 252–264. doi: 10.1016/j.ijpe.2009.11.023.

Bansal, P. (2005) 'Evolving sustainably: A longitudinal study of corporate sustainable development', *Strategic Management Journal*, 26(3), pp. 197–218. doi: 10.1002/smj.441.

Bansal, P. and Roth, K. (2000) 'Why companies go green: A model of ecological responsiveness', *Academy of Management Journal*, 43(4), pp. 717–736. doi: 10.2307/1556363.

Bocken, N. M. P., Short, S. W., Rana, P. and Evans, S. (2014) 'A literature and practice review to develop sustainable business model archetypes', *Journal of Cleaner Production*, 65, pp.

42–56. doi: 10.1016/j.jclepro.2013.11.039.

Boeske, J. and Murray, P.A., 2022. The intellectual domains of sustainability leadership in SMEs. *Sustainability*, *14*(4), p.1978. doi.org/10.3390/su14041978

Braun, V. and Clarke, V. (2006) 'Using thematic analysis in psychology', *Qualitative Research in Psychology*, 3(2), pp. 77–101. doi: 10.1191/1478088706qp063oa.

Bui, B. and de Villiers, C. (2017) 'Business strategies and management accounting in response to climate change risk exposure and regulatory uncertainty', *The British Accounting Review*, 49(1), pp. 4–24. doi: 10.1016/j.bar.2016.10.006.

Busse, C., Schleper, M. C., Weilenmann, J. and Wagner, S. M. (2017) 'Extending the supply chain visibility boundary: Utilizing stakeholders for identifying supply chain sustainability risks', *International Journal of Physical Distribution & Logistics Management*, 47(1), pp. 18–40. doi: 10.1108/IJPDLM-02-2015-0040.

Carter, C. R. and Rogers, D. S. (2008) 'A framework of sustainable supply chain management: Moving toward new theory', International Journal of Physical Distribution & Logistics Management, 38(5), pp. 360–387. doi: 10.1108/09600030810882816.

Castilla-Polo, F. and Guerrero-Baena, M.D., 2023. The business case for sustainability reporting in SMEs: consultants' and academics' perceptions. Sustainable Development, 31(5), pp.3224-3238.

Costanza, R., d'Arge, R., de Groot, R., Farber, S., Grasso, M., Hannon, B., Limburg, K., Naeem, S., O'Neill, R. V., Paruelo, J., Raskin, R. G., Sutton, P. and van den Belt, M. (1997) 'The value of the world's ecosystem services and natural capital', Nature, 387(6630), pp. 253–260. doi: 10.1038/387253a0.

D'Amato, D. and Korhonen, J. (2021) 'Integrating the green economy, circular economy and bioeconomy in a strategic sustainability framework', Ecological Economics, 188, p. 107143. doi: 10.1016/j.ecolecon.2021.107143.

de Oliveira, U.R., Menezes, R.P. and Fernandes, V.A., 2023. A systematic literature review on corporate sustainability: contributions, barriers, innovations and future possibilities. Environment, development and sustainability, p.1. DOI: 10.1007/s10668-023-02933-7.

de Villiers, C., Hsiao, P.-C.K., Zambon, S. and Magnaghi, E., 2022**.** Sustainability, non-financial, integrated, and value reporting (extended external reporting): a conceptual framework and an agenda for future research. *Meditari Accountancy Research*, 30(3), pp.453–471. doi:10.1108/MEDAR-04-2022-1640

Delmas, M. A. and Toffel, M. W. (2008) 'Organizational responses to environmental demands: Opening the black box', Strategic Management Journal, 29(10), pp. 1027–1055. doi: 10.1002/smj.701.

Devinney, T. M., Auger, P. and Eckhardt, G. M. (2010) The myth of the ethical consumer, Cambridge: Cambridge University Press.

Dyllick, T. and Hockerts, K. (2002) 'Beyond the business case for corporate sustainability', Business Strategy and the Environment, 11(2), pp. 130–141. doi: 10.1002/bse.323.

Elkington, J. (1997) [Cannibals with forks: the triple bottom line of 21st century business] - ProQuest. https://www.proquest.com/openview/804cc9d98196ef6e26d88748e89f8db0/1?pq-origsite=gscholar&cbl=35934.

Engert, S., Rauter, R. and Baumgartner, R. J. (2016) 'Exploring the integration of corporate sustainability into strategic management: A literature review', Journal of Cleaner Production, 112(Part 4), pp. 2833–2850. doi: 10.1016/j.jclepro.2015.08.031.

Epstein, M. J. and Roy, M.-J. (2001) 'Sustainability in action: Identifying and measuring the key performance drivers', Long Range Planning, 34(5), pp. 585–604. doi: 10.1016/S0024-6301(01)00084-X.

Flammer, C. (2015) 'Does corporate social responsibility lead to superior financial performance? A regression discontinuity approach', Management Science, 61(11), pp. 2549–2568. doi: 10.1287/mnsc.2014.2038.

Ford, J. D., Ford, L. W. and D'Amelio, A. (2008) 'Resistance to change: The rest of the story', Academy of Management Review, 33(2), pp. 362–377. doi: 10.5465/amr.2008.31193235.

Geissdoerfer, M., Savaget, P., Bocken, N. M. P. and Hultink, E. J. (2017) 'The circular economy – A new sustainability paradigm?', Journal of Cleaner Production, 143, pp. 757–768. doi: 10.1016/j.jclepro.2016.12.048.

George, G., Howard-Grenville, J., Joshi, A. and Tihanyi, L. (2016) 'Understanding and tackling societal grand challenges through management research', Academy of Management Journal, 59(6), pp. 1880–1895. doi: 10.5465/amj.2016.4007.

Glavič, P. and Lukman, R. (2007) 'Review of sustainability terms and their definitions', Journal of Cleaner Production, 15(18), pp. 1875–1885. doi: 10.1016/j.jclepro.2006.12.006.

Gleim, M. R., Smith, J. S., Andrews, D. and Cronin, J. J. (2013) 'Against the green: A multi-method examination of the barriers to green consumption', Journal of Retailing, 89(1), pp. 44–61. doi: 10.1016/j.jretai.2012.10.001.

Grant, D.B., Shaw, S., Sweeney, E., Bahr, W., Chaisurayakarn, S. and Evangelista, P., 2023. Using mixed methods in logistics and supply chain management research: current state and future directions. The International Journal of Logistics Management, 34(7), pp.177-198. doi: 10.1108/IJLM-04-2023-0156

Hahn, T., Figge, F., Pinkse, J. and Preuss, L. (2010) 'Trade-offs in corporate sustainability: You can't have it all', Business Strategy and the Environment, 19(4), pp. 217–229. doi: 10.1002/bse.674.

Hargreaves, T. (2011) 'Practice-ing behaviour change: Applying social practice theory to pro-environmental behaviour change', Journal of Consumer Culture, 11(1), pp. 79–99. doi: 10.1177/1469540510390500.

Hess, D. (2008) 'The three pillars of corporate social reporting as new governance regulation: Disclosure, dialogue, and development', Business Ethics Quarterly, 18(4), pp. 447–482. doi: 10.5840/beq200818434.

Hess, D., 2008. The three pillars of corporate social reporting as new governance regulation: Disclosure, dialogue, and development. Business Ethics Quarterly, 18(4), pp.447-482.

Hillary, R. (2017) Small and medium-sized enterprises and the environment: Business imperatives, Sheffield: Greenleaf Publishing.

Hoffman, A. J. (2005) 'Climate change strategy: The business logic behind voluntary greenhouse gas reductions', California Management Review, 47(3), pp. 21–46. doi: 10.2307/41166304.

Hong, Q.N., Pluye, P., Fàbregues, S., Bartlett, G., Boardman, F., Cargo, M., Dagenais, P., Gagnon, M.P., Griffiths, F., Nicolau, B. and O'Cathain, A., 2018. Mixed methods appraisal tool (MMAT), version 2018. Registration of copyright, 1148552(10), pp.1-7.

Hörisch, J., Freeman, R. E. and Schaltegger, S. (2014) 'Applying stakeholder theory in sustainability management: Links, similarities, dissimilarities, and a conceptual framework', Organization & Environment, 27(4), pp. 328–346. doi: 10.1177/1086026614535786.

Jenkins, H. (2009) 'A business opportunity model of corporate social responsibility for small- and medium-sized enterprises', Business Ethics: A European Review, 18(1), pp. 21–36. doi: 10.1111/j.1467-8608.2009.01546.x.

Kirchherr, J., Piscicelli, L., Bour, R., Kostense-Smit, E., Muller, J., Huibrechtse-Truijens, A. and Hekkert, M. (2018) 'Barriers to the circular economy: Evidence from the European Union (EU)', Ecological Economics, 150, pp. 264–272. doi:

10.1016/j.ecolecon.2018.04.028.

Kolk, A. (2005) 'Environmental reporting by multinationals from the Triad: Convergence or divergence?', Management International Review, 45(1), pp. 145–166.

Kotter, J. P. (1995) 'Leading change: Why transformation efforts fail', Harvard Business Review, 73(2), pp. 59–67.

Kotter, J.P. and Schlesinger, L.A., 1979. Choosing strategies for change. *Harvard Business Review*, 57(2), pp.106–114.

Kuzmanović, M., 2022. Financing SMEs for Sustainability: Drivers, Constraints, and Policies.

Liao, Y., 2022. Sustainable leadership: A literature review and prospects for future research. Frontiers in psychology, 13, p.1045570.doi:10.3389/fpsyg. 2022.1045570.

Lozano, R. (2015) 'A holistic perspective on corporate sustainability drivers', Corporate Social Responsibility and Environmental Management, 22(1), pp. 32–44. doi: 10.1002/csr.1325.

MacArthur, E., 2013. Towards the circular economy. Journal of industrial ecology, 2(1), pp.23-44.

Martins, A., Branco, M.C. Melo, P.N. and Machado, C., 2022. Sustainability in small and medium-sized enterprises: A systematic literature review and future research agenda. *Sustainability*, 14(11), p.6493. doi:10.3390/su14116493

McNeill, L. and Moore, R., 2015. Sustainable fashion consumption and the fast fashion conundrum: fashionable consumers and attitudes to sustainability in clothing choice. International journal of consumer studies, 39(3), pp.212-222.

Nidumolu, R., Prahalad, C. K. and Rangaswami, M. R. (2009) 'Why sustainability is now the key driver of innovation', Harvard Business Review, 87(9), pp. 56–64.

Niinimäki, K., Peters, G., Dahlbo, H., Perry, P., Rissanen, T. and Gwilt, A. (2020) 'The environmental price of fast fashion', Nature Reviews Earth & Environment, 1(4), pp. 189–200. doi: 10.1038/s43017-020-0039-9.

Norman, W. and MacDonald, C. (2004) 'Getting to the bottom of "Triple Bottom Line"', Business Ethics Quarterly, 14(2), pp. 243–262. doi: 10.5840/beq200414211.

Nygaard, S., Kokholm, A.R. and Huulgaard, R.D., 2022. Incorporating the sustainable development goals in small- to medium-sized enterprises. *Journal of Urban Ecology*, 8(1), juac022. doi:10.1093/jue/juac022.

OECD, 2022. Financing SMEs for Sustainability: Drivers, Constraints and Policies. OECD SME and entrepreneurship papers,(35), No. 35.

Peattie, K. and Crane, A. (2005) 'Green marketing: Legend, myth, farce or prophesy?', Qualitative Market Research: An International Journal, 8(4), pp. 357–370. doi: 10.1108/13522750510619733.

Saberi, S., Kouhizadeh, M., Sarkis, J. and Shen, L. (2019) 'Blockchain technology and its relationships to sustainable supply chain management', International Journal of Production Research, 57(7), pp. 2117–2135. doi: 10.1080/00207543.2018.1533261.

Schaltegger, S. and Burritt, R. (2014) 'Measuring and managing sustainability performance of supply chains: Review and sustainability supply chain management framework', Supply Chain Management: An International Journal, 19(3), pp. 232–241. doi: 10.1108/SCM-02-2014-0061.

Seuring, S. and Gold, S. (2013) 'Sustainability management beyond corporate boundaries: From stakeholders to performance', Journal of Cleaner Production, 56, pp. 1–6. doi: 10.1016/j.jclepro.2012.11.033.

Seuring, S. and Müller, M. (2008) 'From a literature review to a conceptual framework for sustainable supply chain management', Journal of Cleaner Production, 16(15), pp. 1699–1710. doi: 10.1016/j.jclepro.2008.04.020.

TEEB (2010) The economics of ecosystems and biodiversity: Mainstreaming the economics

of nature. Available at: http://www.teebweb.org/our-publications/teeb-study-reports/mainstreaming-the-economics-of-nature/.

Testa, F., Iraldo, F. and Frey, M., 2011. The effect of environmental regulation on firms' competitive performance: The case of the building & construction sector in some EU regions. Journal of environmental management, 92(9), pp.2136-2144.doi: 10.1016/j.jenvman.2013.12.005.

Tumpa, T. J., Ali, S. M., Rahman, M. H., Paul, S. K., Chowdhury, P. and Rehman Khan, S. A. (2019) 'Barriers to green supply chain management: An emerging economy context', Journal of Cleaner Production, 236, p. 117617. doi: 10.1016/j.jclepro.2019.117617.

United Nations, 2015. *Transforming our world: the 2030 Agenda for Sustainable Development*. [online] New York: United Nations. Available at: https://sdgs.un.org/2030agenda.

Van Zanten, J. A. and Van Tulder, R. (2018) 'Multinational enterprises and the Sustainable Development Goals: An institutional approach to corporate engagement', Journal of International Business Policy, 1(3–4), pp. 208–233. doi: 10.1057/s42214-018-0008-x.

Vaquerizo, L., & Kiss, A. A. (2023). Thermally self-sufficient process for cleaner production of e-methanol by CO2 hydrogenation. *Journal of Cleaner Production*, *433*, 139845. https://doi.org/10.1016/j.jclepro.2023.139845.

White, K., Hardisty, D. J. and Habib, R. (2019) 'The elusive green consumer', Harvard Business Review, 97(4), pp. 124–133.

Whittemore, R. and Knafl, K. (2005) 'The integrative review: Updated methodology', Journal of Advanced Nursing, 52(5), pp. 546–553. doi: 10.1111/j.1365-2648.2005.03621.x.

Wiek, A., Withycombe, L. and Redman, C. L. (2011) 'Key competencies in sustainability: A reference framework for academic program development', Sustainability Science, 6(2), pp. 203–218. doi: 10.1007/s11625-011-0132-6.

Zhu, B., Nguyen, M., Sarm Siri, N. and Malik, A., 2022. Towards a transformative model of circular economy for SMEs. *Journal of Business Research*, 144, pp.545–555. doi:10.1016/j.jbusres.2022.01.093