SUSTAINABLE SUPPLY CHAIN CHALLENGES IN COTTAGE INDUSTRIES: A SYSTEMATIC LITERATURE REVIEW

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Abstract. Sustainable supply chains (SSCs) have become central to global sustainability discourse, emphasizing the integration of environmental, social, and economic objectives across production networks. However, existing SSC frameworks have largely been developed within large-scale and multinational enterprise contexts, prioritizing efficiency, compliance, and global value chain coordination. In contrast, cottage industries, which are small-scale, household or community-based production systems, operate within localized, labour-intensive, and resource-dependent structures that are often inherently aligned with sustainability principles. Despite their socioeconomic importance in rural development, the challenges they face in implementing structured, sustainable supply chain practices remain fragmented across the literature. This study conducts a systematic literature review following PRISMA 2020 guidelines, examining Scopus-indexed publications from 2020 to 2025. Twenty-one peer-reviewed articles met the inclusion criteria and were thematically synthesized. The findings reveal multidimensional and interrelated barriers spanning financial constraints, operational fragility, technological limitations, supply chain risk and resilience gaps, weak collaboration mechanisms, knowledge gaps, environmental compliance challenges, social sustainability tensions, and limited participation in global value chains. These constraints collectively restrict the systematic integration of sustainability practices and reduce resilience within small-scale production networks. By consolidating dispersed evidence into a structured thematic synthesis, this review extends sustainable supply chain discourse beyond large enterprise models and highlights the need for context-sensitive sustainability strategies tailored to cottage industry supply chains.

Keywords. *Sustainable Supply Chains; Cottage Industries and Small-Scale Enterprises; Rural Production Systems; Systematic Literature Review; Supply Chain Implementation Challenges.*

1. Introduction

Sustainability has become a defining concern in contemporary production and consumption systems as societies confront escalating environmental degradation, widening social inequalities, and increasing pressure on finite natural resources (Eelager et al., 2025). Climate change, biodiversity loss, and environmental pollution have intensified scrutiny of how goods are produced, distributed, and consumed across interconnected production networks. In this context, supply chains play a critical role in shaping sustainability outcomes, as a substantial share of environmental and social impacts originates across upstream and downstream activities rather than at the point of final production (Almelhem et al., 2025; Seuring & Müller, 2008).

Recent global crises have further underscored the importance of sustainability within supply chains. The COVID-19 pandemic exposed the fragility of highly globalized supply networks, disrupting production, trade, and livelihoods worldwide, while climate-related risks continue to exert long-term pressure on social and economic systems (Liedtke, 2021). Although global supply chains have contributed to economic growth and employment generation, they have also generated significant social, ecological, and economic

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imbalances (Ponte et al., 2023). Environmentally, supply chain activities are estimated to account for over 80% of global environmental impacts across industries (Mthembu, 2021). Socially, global value chain participation has been associated with labour exploitation and persistent inequality across developing economies (Maharani & Mursitama, 2023). Economically, value capture concentration among lead firms has reinforced structural asymmetries between high-income and low-income producers (Ponte et al., 2023).

In response, sustainable supply chains have gained increasing attention in academic research, policy discourse, and development practice, as a comprehensive approach to addressing environmental, social, and economic challenges across production networks (Koberg & Longoni, 2019). They emphasize the integration of environmental protection, social responsibility, and economic viability throughout supply chain activities, recognizing these networks as both sources of sustainability risks and key leverage points for resilience (Amirian et al., 2022). In this regard, sustainable supply chain approaches are closely aligned with global sustainability agendas, particularly the United Nations Sustainable Development Goals (SDGs), including responsible consumption and production, decent work, and reduced inequalities (Wang & Zhao, 2025).

However, despite this growing emphasis, sustainable supply chain research exhibits a structural bias toward large, formalized, and multinational enterprises operating within global value chains (Boström et al., 2015; Koberg & Longoni, 2019). These contexts are typically supported by advanced governance mechanisms, digital traceability systems, and regulatory compliance structures. In contrast, small-scale, informal, and community-based production systems—where sustainability challenges are often more pronounced—remain underrepresented and insufficiently synthesized in the existing literature (Govindan et al., 2021; Rueda & Lambin, 2013).

Within this broader discourse, cottage industries represent a distinct yet economically and socially significant production context. Typically small-scale, household-based or community-centred enterprises, they rely heavily on manual labour, indigenous knowledge, and traditional skills rather than capital-intensive technologies (Vijayalaxmi & Kalluraya, 2024). Cottage industries play a vital role in supporting rural livelihoods, generating employment for marginalized populations, and preserving cultural heritage and craftsmanship (Biswas et al., 2017; Mthembu, 2021). In many developing countries, they form the backbone of rural economies, contributing to income diversification, poverty reduction, and inclusive local development (Chowdhury & Hoque, 2025).

Cottage industries differ structurally from small and medium enterprises (SMEs) in terms of scale, formality, and production organization. While SMEs generally operate as formal business entities with structured management systems, access to finance, and higher levels of mechanization, cottage industries are predominantly household-based, family-operated, and embedded within informal or semi-formal institutional environments. They typically exhibit limited capital intensity, restricted access to credit and market infrastructure, and strong dependence on local resources and community networks (Ogundimu & Adedapo, 2025; Chowdhury & Hoque, 2025)

However, the term "cottage industry" is not consistently applied within supply chain literature. To address this limitation, the present study adopts a structurally grounded inclusion approach by considering SMEs, MSMEs, and other small-scale production systems where they exhibit comparable characteristics—particularly labour intensity, resource constraints, informality, and local embeddedness. This allows the study to include relevant research while keeping a clear focus on cottage industry characteristics.

Given these characteristics, sustainable supply chain implementation in cottage industries cannot be adequately explained using frameworks developed for large enterprises. Instead, it is shaped by distinct resource limitations, institutional conditions, and network structures that require context-specific analysis. Cottage industries often depend directly on local natural resources and operate through informal or semi-formal networks while facing constraints related to infrastructure, finance, technology, and institutional support. Consequently, their supply chains are vulnerable to environmental degradation, market volatility, and external shocks such as pandemics and climate-related disruptions (Biswas et al., 2017; Liedtke, 2021). At the same time, localized production structures, shorter supply chains, and community embeddedness offer opportunities for low-impact production, responsible resource use, fair labour practices, and community resilience.

Despite this potential, cottage industry supply chains face diverse and interrelated barriers that hinder the effective implementation of sustainable supply chain practices. While individual studies examine specific operational, financial, environmental, or relational challenges, existing research remains fragmented across disciplines and contexts (Silva et al., 2021). Few studies adopt a comprehensive sustainable supply chain perspective in small-scale production environments, and no systematic synthesis currently consolidates the recurring implementation challenges specific to cottage and structurally comparable production systems.

This fragmentation constrains theoretical development and limits evidence-based policy and intervention design. Accordingly, this study employs a systematic literature review to synthesize and consolidate existing research on sustainable supply chains in cottage industries. The primary objective is to identify and categorize the key challenges associated with implementing sustainable supply chain practices in cottage and small production-based industries. By organizing dispersed evidence into a structured thematic synthesis, this study extends sustainable supply chain discourse beyond large enterprise models and contributes to more context-sensitive sustainability strategies for rural production systems.

2. Research Methodology

This study employed a Systematic Literature Review (SLR) to synthesize existing research on sustainable supply chain implementation in cottage industries. The review was guided by a clearly defined research question structured using the PIO/PICo framework, which is appropriate for qualitative and management-oriented systematic reviews in small-scale production contexts. The components of the framework were defined as follows (Table 1):

Table 1, PICO component

Component	Definition in This Study
P (Population)	Cottage industries and structurally comparable small-scale production enterprises
I (Interest)	Challenges associated with the implementation of sustainable supply chain practices
O (Outcome)	Identification, categorization, and synthesis of reported implementation barriers
Co (Context)	Small-scale, craft-based, artisanal, informal, and developing country production settings

Based on this framework, the review was guided by the following research question: What challenges are reported in the literature regarding the implementation of sustainable supply chain practices in cottage and small-scale production industries?

2.1. SEARCH STRATEGY AND STUDY SELECTION

A comprehensive literature search was conducted using Scopus due to its extensive coverage of sustainability and supply chain research, strong indexing standards, and multidisciplinary relevance (Baas et al., 2020). The review focused on publications from 2020 to 2025 to capture recent developments in sustainable supply chain practices, particularly in response to global disruptions such as COVID-19 and the increasing emphasis on sustainability transitions (Chen et al., 2023). Due to limited access to full-text databases, a two-stage search strategy was adopted. First, Scopus was used to identify relevant peer-reviewed journals using keywords such as "supply chain," "sustainable supply chain," "small business," and "craft." Second, the identified journals were systematically searched using the following Boolean string :("sustainable supply chain" OR "green supply chain" OR "supply chain sustain-ability") AND ("cottage industry" OR "small-scale enterprise" OR "SME" OR "MSME" OR "artisan" OR "craft enterprise" OR "informal enterprise" OR "rural production") AND ("challenges" OR "barriers" OR "constraints" OR "implementation"). Where journal platforms supported Boolean search, this string was applied directly; otherwise, studies were identified through manual title and abstract screening using the same criteria. This approach ensured the inclusion of accessible, recent, and contextually relevant studies. The selection process followed PRISMA 2020 guidelines and is illustrated in Figure 1. An initial 82 records were identified. After removing 14 records lacking clear Scopus coverage, 68 records remained for screening. Title screening excluded 16 records, and abstract screening excluded an additional 14 records. Full-text assessment was conducted on the remaining studies, resulting in 17 exclusions, primarily because the studies focused on large-scale or firm-based production systems, inconsistent with cottage industry characteristics. Ultimately, 21 peer-reviewed articles met the inclusion criteria and were included in the final review.

2.2. INCLUSION CRITERIA, DATA EXTRACTION AND SYNTHESIS

Studies were included if they were published in English, peer-reviewed, and addressed sustainable supply chains or value chains within cottage or structurally comparable small-scale production systems. Due to the inconsistent use of the term "cottage industry" in supply chain literature, the review also considered studies focusing on small-scale, informal or semi-formal, labour-intensive, and resource-constrained production contexts, including SMEs, MSMEs, farmer-based enterprises, and similar systems. This approach enabled broader empirical coverage while maintaining conceptual relevance to cottage industry characteristics. Studies were excluded if they did not address sustainability or supply chain integration, or if they focused on large-scale, multinational, or highly formalized production systems that do not reflect small-scale and community-based contexts.

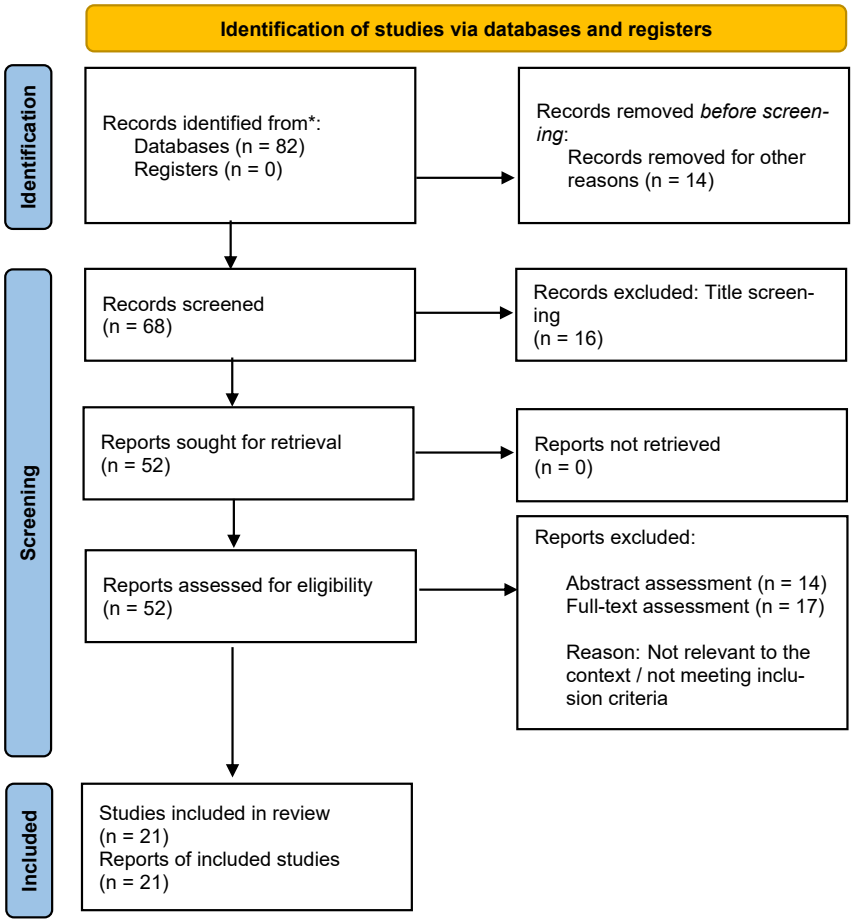

Figure 1, PRISMA Flow Diagram for process of article selection for the systematic review (Source: Page MJ, et al. BMJ 2021; 372:n71. DOI: 10.1136/bmj.n71.)

The 21 selected articles were reviewed in full, and data extraction focused on challenges associated with sustainable supply chain implementation, including financial, operational, technological, relational, environmental, social, and market-related barriers. The findings were synthesized using an inductive thematic analysis approach, allowing themes to emerge directly from the data. The analysis followed three stages: (1) open coding, where relevant challenge-related content was identified and labelled; (2) axial coding, where related codes were grouped based on conceptual similarity; and (3) theme development, where categories were refined into coherent and distinct themes. To enhance analytical reliability, coding decisions were cross-checked across studies to ensure that each theme was supported by multiple sources. Where necessary, studies were re-examined to confirm appropriate classification. This process resulted in nine interrelated challenge categories, which are presented in the following section.

3. Results and Discussion

The 21 selected studies were subjected to thematic analysis to identify recurring challenges associated with sustainable supply chain implementation in cottage and structurally comparable small-scale production systems. This process resulted in the identification of nine interrelated challenge categories. These themes encompass financial and capital constraints, operational and resource limitations, technological and digital constraints, supply chain risk and resilience limitations, collaboration and integration challenges, knowledge transfer and learning gaps, environmental sustainability challenges, social sustainability and supplier constraints, and global value chain and market limitations. While analytically distinct, these themes are closely interconnected. Together, they reveal that sustainable supply chain implementation in cottage industries is constrained by a multidimensional set of structural barriers that reinforce one another and limit the institutionalization of sustainability practices across small-scale production networks.

3.1. FINANCIAL AND CAPITAL CONSTRAINTS: STRUCTURAL VULNERABILITY

Financial constraints emerge as a foundational barrier to sustainable supply chain adoption. Several studies highlight persistent capital shortages, limited working capital, and restricted access to formal financing mechanisms, which directly constrain investment in sustainability initiatives (Miswanto et al., 2024; Sun et al., 2024). In developing economies, SMEs experience overlapping financial, human, and operational resource constraints that reduce their ability to reorganize capabilities and compete effectively within global markets (Afaneh & Bello, 2023; Bandoophanit, 2024). Beyond capital scarcity, financial risk exposure within supply chains increases vulnerability, particularly where financial mechanisms are weak or unstable (Sun et al., 2024). Limited financial literacy further constrains strategic decision-making in sustainability planning (Miswanto et al., 2024). Additionally, sustainability incentive mechanisms, such as return discounts or eco-labelling schemes, may reduce short-term profit margins, posing economic risks for small enterprises with minimal financial buffers (Muhwati & Salisbury, 2022). Collectively, these

findings indicate that financial constraints function not only as resource shortages but as structural vulnerabilities limiting long-term sustainability transformation.

3.2. OPERATIONAL AND RESOURCE LIMITATIONS: FRAGILITY OF SMALL-SCALE SYSTEMS

Operational fragility further constrains sustainability integration. SMEs frequently face operational limitations that restrict their ability to systematically apply sustainability guidelines within supply chain systems (Afaneh & Bello, 2023; Ramakrishna et al., 2023). Weak coordination across procurement, production, and distribution stages reduces supply chain efficiency and sustainability performance (Miswanto et al., 2024; Ralahallo et al., 2024; Toni et al., 2024). Limited logistics capability, high transportation costs, and constrained distribution networks further undermine competitiveness (Dahliani et al., 2023; Sugiono et al., 2023). Small teams performing multiple operational roles create time and capacity limitations, making additional sustainability activities difficult to manage (Muhwati & Salisbury, 2022). Resource constraints across financial, human, and technological dimensions further restrict implementation of environmental management practices (Amorim et al., 2023; Ramakrishna et al., 2023; Sun et al., 2024). Scalability constraints limit participation in broader or multi-partner sustainability initiatives (Veiga et al., 2024). Moreover, limited resilience against disruptions such as COVID-19 exposes operational vulnerability and weak continuity planning (Monnagaaratwe & Mathu, 2022). These findings collectively illustrate that operational barriers are systemic rather than incidental.

3.3. TECHNOLOGICAL AND DIGITAL CONSTRAINTS: BARRIERS TO MODERNIZATION

Technological capability emerges as a critical enabler of sustainable supply chain performance. However, limited technological infrastructure and innovation capacity restrict sustainability advancement in small enterprises (Afaneh & Bello, 2023). Low adoption of digital tools and ICT systems constrains logistics documentation, communication, and supply chain integration (Miswanto et al., 2024; Ralahallo et al., 2024; Sugiono et al., 2023). Weaker digital capabilities also limit process innovation and adaptive capacity, particularly in the context of rapid Industry 4.0 transitions (Veiga et al., 2024). Without digital literacy and technological investment, data-driven decision making, traceability, and sustainability monitoring remain limited (Monnagaaratwe & Mathu, 2022; Ramakrishna et al., 2023; Yang et al., 2022). Technological gaps, therefore, reinforce structural disadvantages in implementing advanced SSC practices.

3.4. SUPPLY CHAIN RISK AND RESILIENCE: REACTIVE SYSTEMS

Several studies emphasize limited supply chain risk management capability among SMEs (Sun et al., 2024). Resource-constrained enterprises often lack the financial and operational capacity to implement comprehensive supply chain risk management frameworks (Afaneh & Bello, 2023; Ralahallo et al., 2024; Ramakrishna et al., 2023). Selective or partial adoption of SCRM reduces overall sustainability performance (Sun et al., 2024)

SMEs are also more vulnerable to supply chain disruptions compared to large enterprises, reducing resilience and competitiveness (Bandoophanit, 2024; Monnagaaratwe & Mathu, 2022; Sun et al., 2024). These findings indicate that sustainability continuity is compromised when risk management systems remain underdeveloped.

3.5. COLLABORATION AND INTEGRATION CHALLENGES: FRAGMENTED NETWORKS

Sustainable supply chains depend on coordination across actors. However, SMEs often lack clear guidance regarding collaboration enablers and implementation mechanisms (Malviya et al., 2024). Weak synchronization, limited goal congruence, and organizational misalignment reduce collaboration effectiveness (Malviya et al., 2024; Ralahallo et al., 2024; Ramakrishna et al., 2023; Sugiono et al., 2023). Insufficient collaboration mechanisms hinder sustainability performance (Bandoophanit, 2024; Monnagaaratwe & Mathu, 2022), while limited information sharing reduces forecasting accuracy and operational efficiency (Malviya et al., 2024; Ralahallo et al., 2024; Sun et al., 2024). Financial dependency and inadequate technological capability further constrain collaborative initiatives (Amorim et al., 2023; Malviya et al., 2024; Yang et al., 2022). These relational challenges demonstrate that sustainability barriers extend beyond firm-level constraints into inter-organisational dynamics.

3.6. KNOWLEDGE TRANSFER AND LEARNING GAPS: COGNITIVE CONSTRAINTS

Limited managerial understanding of sustainability concepts restricts implementation effectiveness (Afaneh & Bello, 2023; Bandoophanit, 2024). Weak knowledge transfer mechanisms and insufficient learning processes further constrain sustainability advancement (Afaneh & Bello, 2023; Ramakrishna et al., 2023). Limited exposure to global value chains reduces opportunities for learning and benchmarking (Amorim et al., 2023; Veiga et al., 2024). Additionally, gaps in understanding the integration between supply chain finance, risk management, and sustainability limit guidance for SMEs (Sun et al., 2024; Toni et al., 2024). Inadequate employee training and skill development further restrict operationalization of sustainability initiatives (Miswanto et al., 2024; Triyono et al., 2023). These findings highlight cognitive and capability limitations as central barriers.

3.7. ENVIRONMENTAL SUSTAINABILITY CHALLENGES: FRAGMENTED GREEN IMPLEMENTATION

Environmental sustainability implementation remains uneven. The absence of clear measurement matrices complicates the assessment of green supply chain management effectiveness. Full stakeholder involvement is often required but difficult to achieve (Novitasari et al., 2023). SMEs struggle with integrating environmental considerations across procurement, production, logistics, and distribution stages (Novitasari et al., 2023). Supplier environmental compliance and green procurement practices remain weak (Dahliani et al., 2023; Novitasari et al., 2023). Transportation emissions, packaging-related waste, and inadequate recycling systems further constrain environmental performance (Novitasari et al., 2023). Increasing regulatory pressure intensifies these challenges (Dahliani et al., 2023). Environmental sustainability barriers, therefore, reflect both operational and institutional constraints.

3.8. SOCIAL SUSTAINABILITY AND SUPPLIER CONSTRAINTS: RELATIONAL TENSIONS

Social sustainability introduces complex relational dynamics. Small suppliers face resource and capacity limitations that restrict compliance with social sustainability requirements (Amorim et al., 2023; Uttam et al., 2025). Power asymmetry limits their ability to enforce standards upstream (Uttam et al., 2025; Yang et al., 2022). Conflicting buyer requirements and a lack of standardized social sustainability guidelines increase administrative burden and uncertainty (Novitasari et al., 2023; Uttam et al., 2025). Multi-tier supply chain complexity reduces visibility, while divergent worker expectations may conflict with long-term social goals (Bandoophanit, 2024; Uttam et al., 2025). However, strategies such as certifications, supplier development, peer learning, training programs, monitoring systems, and collaborative planning can mitigate tensions (Uttam et al., 2025). These findings suggest that social sustainability implementation requires relational and capacity-building approaches.

3.9. GLOBAL VALUE CHAIN AND MARKET LIMITATIONS: PERIPHERAL POSITIONING

Limited participation in global value chains reduces exposure to best practices and sustainability opportunities (Veiga et al., 2024). SMEs also struggle to integrate customer insights into demand-driven sustainable supply chain models. Weak market integration, therefore, constrains motivation, knowledge diffusion, and sustainability adoption (Veiga et al., 2024; Afaneh & Bello, 2023). Market barriers, including low consumer demand for sustainability, uncertainty toward remanufactured products, and ambiguity in defining green supply chain boundaries (Bandoophanit, 2024), reinforce peripheral positioning and constrain small-scale enterprises' motivation, knowledge, and capacity to adopt sustainable practices.

3.10. INTERDEPENDENCY ANALYSIS: HOW CHALLENGES INTERACT

The identified challenges form an interconnected system rather than independent barriers. Financial constraints act as the primary driver, limiting investment in technology, skills development, and risk management, and thereby shaping the overall capacity of enterprises to engage in sustainable supply chain practices (Sun et al., 2024; Miswanto et al., 2024). These limitations constrain technological adoption, which in turn reduces operational efficiency, restricts information sharing, and limits access to broader market networks where sustainability knowledge and best practices are exchanged (Veiga et al., 2024; Ralahallo et al., 2024).These effects are further reinforced by knowledge and capacity gaps, as limited managerial understanding reduces the ability to effectively utilize available resources and implement sustainability strategies (Afaneh & Bello, 2023; Bandoophanit, 2024). As a result, operational inefficiencies, weak collaboration, fragmented environmental practices, social sustainability challenges, and limited market integration emerge as interconnected outcomes of these underlying structural constraints. These relationships are illustrated in Figure 2, which organizes the nine challenge themes across three structural layers to show how foundational barriers cascade into capability limitations and sustain downstream systemic barriers, with constraints across all layers mutually reinforcing one another.

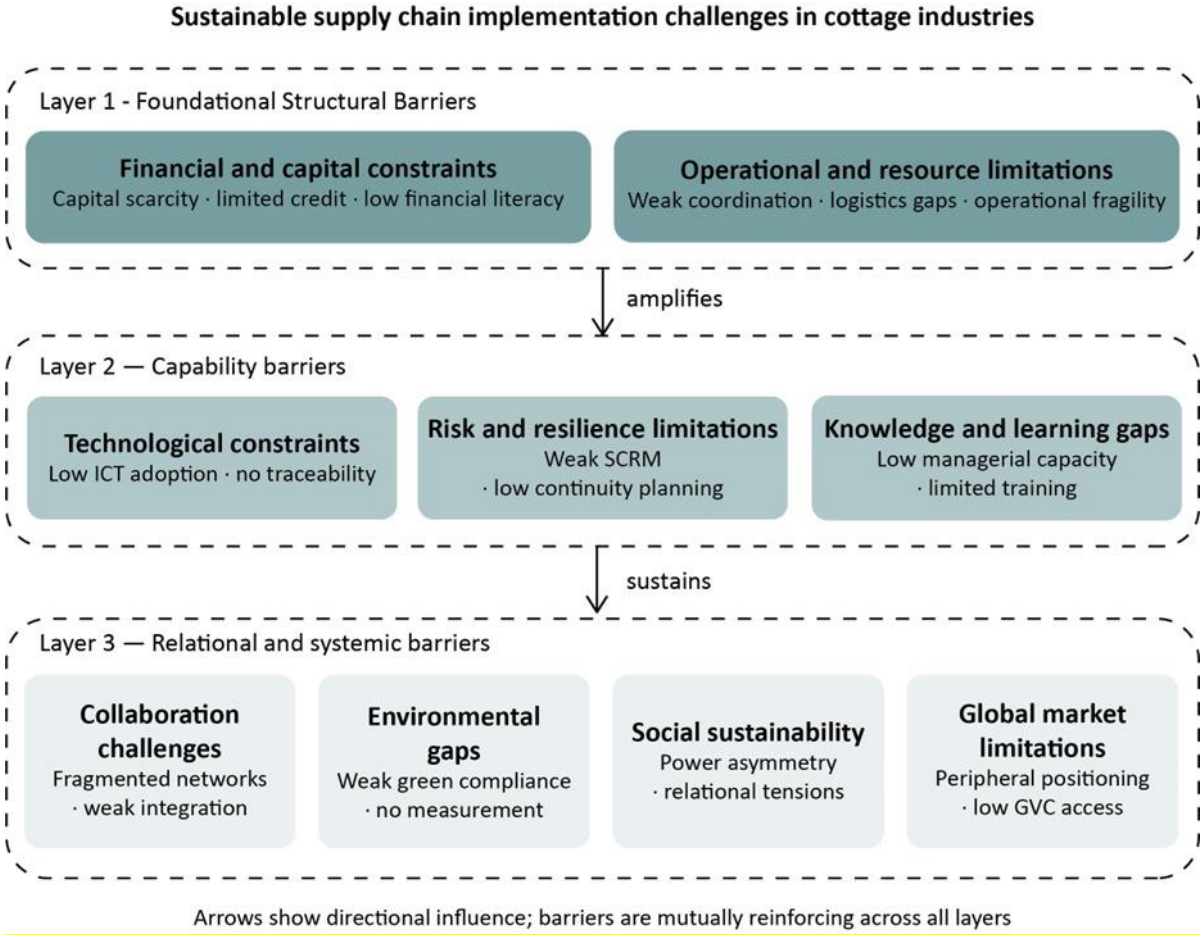

Figure 2, Interconnected Sustainable Supply Chain Implementation Challenges

Figure 2 shows interconnected sustainable supply chain implementation challenges in cottage industries. Solid arrows indicate cascading directional influence from foundational to systemic barriers. Source: Authors' thematic synthesis.

Table 2, Summary of Identified Themes and Supporting Studies

Identified Themes and Supporting Studies	
Theme	**Supporting Studies**
Financial and Capital Constraints	Afaneh & Bello, 2023; Amorim et al., 2023; Bandoophanit, 2024; Dahliani et al., 2023; Le et al., 2023; Malviya et al., 2024; Miswanto et al., 2024; Monnagaaratwe & Mathu, 2022; Muhwati & Salisbury, 2022; Ramakrishna et al., 2023; Sun et al., 2024; Sunarya et al., 2023; Toni et al., 2024; Veiga et al., 2024; Yang et al., 2022
Operational and Resource Limitations	Afaneh & Bello, 2023; Amorim et al., 2023; Bandoophanit, 2024; Dahliani et al., 2023; Le et al., 2023; Malviya et al., 2024; Miswanto et al., 2024; Monnagaaratwe & Mathu, 2022; Muhwati & Salisbury, 2022; Ralahallo et al., 2024; Ramakrishna et al., 2023; Sugiono et al., 2023; Sun et al., 2024; Sunarya et al., 2023; Toni et al., 2024; Triyono et al., 2023; Veiga et al., 2024; Yang et al., 2022;Yang et al., 2023

Technological and Digital Constraints	Afaneh & Bello, 2023; Bandoophanit, 2024; Malviya et al., 2024; Miswanto et al., 2024; Monnagaaratwe & Mathu, 2022; Muhwati & Salisbury, 2022; Ralahallo et al., 2024; Ramakrishna et al., 2023; Sugiono et al., 2023; Sunarya et al., 2023; Yang et al., 2023
Supply Chain Risk and Resilience	Afaneh & Bello, 2023; Bandoophanit, 2024; Monnagaaratwe & Mathu, 2022; Ralahallo et al., 2024; Ramakrishna et al., 2023; Sugiono et al., 2023; Sun et al., 2024; Yang et al., 2022 ; Yang et al., 2023
Collaboration and Integration Challenges	Afaneh & Bello, 2023; Amorim et al., 2023; Bandoophanit, 2024; Dahliani et al., 2023; Malviya et al., 2024; Miswanto et al., 2024; Monnagaaratwe & Mathu, 2022; Novitasari et al., 2023; Ralahallo et al., 2024; Ramakrishna et al., 2023; Sugiono et al., 2023; Sun et al., 2024; Sunarya et al., 2023; Veiga et al., 2024; Yang et al., 2022; Yang et al., 2023
Knowledge Transfer and Learning	Afaneh & Bello, 2023; Amorim et al., 2023; Bandoophanit, 2024; Malviya et al., 2024; Miswanto et al., 2024; Monnagaaratwe & Mathu, 2022; Novitasari et al., 2023; Ramakrishna et al., 2023; Sun et al., 2024; Sunarya et al., 2023; Toni et al., 2024; Triyono et al., 2023; Veiga et al., 2024; Yang et al., 2022; Yang et al., 2023
Environmental Sustainability Challenges	Dahliani et al., 2023; Novitasari et al., 2023
Social Sustainability and Supplier Constraints	Amorim et al., 2023; Bandoophanit, 2024; Novitasari et al., 2023; Toni et al., 2024; Uttam et al., 2025; Yang et al., 2022
Global Value Chain and Market Limitations	Afaneh & Bello, 2023; Bandoophanit, 2024; Muhwati & Salisbury, 2022; Veiga et al., 2024

Overall, the findings indicate that sustainable supply chain challenges in cottage industries are systemic and mutually reinforcing. Addressing these challenges requires integrated, context-sensitive, and capacity-oriented approaches that target foundational constraints, rather than isolated or single-dimension interventions. The identified themes and their supporting studies are summarized in Table 2.

4. Conclusion

Cottage industries embody inherent sustainability characteristics through localized production, labour intensity, and community embeddedness. However, this review demonstrates that such intrinsic qualities alone are insufficient to ensure systematic, sustainable supply chain integration.

The thematic synthesis of 21 studies reveals that sustainability challenges in cottage industry supply chains are multidimensional and interdependent. Financial, technological, and knowledge-related constraints function as primary structural drivers, cascading into operational inefficiencies, weak collaboration, fragmented environmental practices, social sustainability tensions, and peripheral market positioning. These challenges do not operate independently; they form a mutually reinforcing system in which foundational resource limitations constrain the capacity for broader sustainability transformation across small-scale production networks.

Theoretically, this review contributes by consolidating fragmented literature into a structured thematic categorization of sustainable supply chain implementation challenges specific to cottage industry contexts. It extends sustainable supply chain discourse beyond large multinational enterprises and highlights the need for differentiated sustainability approaches suited to small-scale, community-based production systems. Practically, the findings suggest that strengthening sustainable supply chains in cottage industries requires coordinated and context-sensitive interventions, including improved financial accessibility, digital capability development, cluster-based collaboration mechanisms, risk management support, sustainability training, adaptable environmental metrics, and policy frameworks that account for informal production realities.

Future research should develop empirical case studies, comparative regional analyses, and intervention-oriented models to further examine how context-specific sustainable supply chain strategies can be operationalized within small-scale industries. By recognizing both the potential and structural constraints of cottage industry supply chains, policymakers and researchers can design sustainability strategies that promote resilience, inclusivity, and long-term rural development.

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