

Building circular-resilient supply chains: An exploratory study of practice – performance relationship

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ABSTRACT

In response to growing environmental degradation, geopolitical disruptions, and supply chain vulnerabilities, the integration of circularity and resilience has emerged as a strategic imperative. Yet, existing research predominantly examines these constructs in isolation, offering limited insight into how inter-organisational practices can jointly advance both objectives. Moreover, performance measurement systems (PMS) capable of evaluating the impact of circular-resilient strategies remain underdeveloped. This study extends the Supply Chain Practice View (SCPV) by examining how firms operationalise circular and resilience practices and measure their outcomes. Drawing on 23 semi-structured interviews across seven Vietnamese firms and four external stakeholders, including universities, governmental, and non-governmental organisations, we identify ten inter-organisational practices and classify six categories of performance indicators. A novel contribution of this study is the integration of collaborative practices with corresponding performance metrics, offering a practical framework for assessing and guiding circular-resilient supply chain transformation. The findings provide actionable insights for managers and policymakers seeking to improve supply chain sustainability, adaptability, and performance.

Keywords: circular supply chain, supply chain resilience, multiple case studies, performance measurement system

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1. INTRODUCTION

In an era of increasing resource scarcity, environmental degradation, and global risks on political conflicts and climate change, supply chains face unprecedented challenges and firms have been prompted to adopt strategies that not only enhance sustainability but also ensure long-term stability (Negri et al., 2021). In response, two critical paradigms, in addressing these challenges, have emerged in the field of Supply Chain Management (SCM): circular supply chain management (CSCM) and supply chain resilience (SCR) (Graessler et al., 2024; Ivanov, 2024). While CSCM aims to close material loops and minimise environmental impact, SCRE focuses on enhancing a supply chain's capacity to absorb and adapt to disruptions. The integration of these paradigms offers firms the potential to achieve sustainability objectives and resilience against external shocks simultaneously.

Extant literature has begun to explore the interplay between CSCM and SCRE, identifying both synergies and tensions. For instance, localised recycling and reuse practices can reduce resource dependency and thus enhance resilience, whereas resilient strategies such as supplier diversification can stabilise circular flows. However, challenges remain. Circular supply chains often involve complex stakeholder networks and face uncertainties in recycled material supply, regulatory variability, and logistical inefficiencies (Rogan, Fürstenberg and Wieland, 2022), such as uncertainty in recycled material supply, regulatory constraints, and logistical inefficiencies (De Lima and Seuring, 2023). On the other hand, resilient practices, such as inventory buffering or redundancy, may conflict with circular goals by increasing holding costs, waste and emissions, conflicting with circular economy goals (Negri et al., 2021). These trade-offs underscore the need for a deeper understanding of **how supply chain practices can be designed to support both circularity and resilience simultaneously**.

To address this gap, this study employs the Supply Chain Practice View (SCPV) (Carter et al., 2017), which posits that specific, replicable supply chain practices influence performance outcomes. While SCPV has been applied in sustainability contexts (Kirchoff and Falasca, 2022; Salmi et al., 2023), it has not yet been extended to circular-resilient supply chains (CRSCs) and supply chain performance measurement systems (SCPMS). By extending SCPV to circular-resilient supply chains, we seek to identify and assess inter-organisational practices that can drive both circularity and resilience, while establishing how these practices contribute to measurable performance outcomes. Accordingly, this study aims to address the following research questions:

Research question 1. What inter-organizational practices are adopted or developed by supply chain stakeholders to promote both circularity and resilience? (RQ1)

Research question 2. How can these practices be evaluated in terms of their contributions to circular and resilient supply chain performance? (RQ2)

2. BACKGROUND AND CONCEPTUAL FRAMING

2.1. Circular and resilient practices in supply chain management

The concept of CSCM has evolved over the past few decades; however, it was not until 2018 and beyond that the first formal concepts of CSCM were introduced by Batista et al. (2018) as the combination of forward and reverse supply chain management uses various value-creation processes to extend the product life cycle and promote sustainability. Farooque et al. (2019, p.884) further refined the definition of CSCM, pinpointing that it requires “*system-wide innovation in*

business models and supply chain functions” and involves “*all stakeholders in a product/service lifecycle*.” These “*innovations*” often emerge through several supply chain practices relating to circular product (re)design, circular procurement, cleaner production, and End-of-life product and waste management processes (Farooque et al., 2022), and emphasizes the need for collaborative practices among SC “*stakeholders*”(Leising, Quist and Bocken, 2018; Farooque et al., 2022).

Parallel to CSCM, SCRE has been a growing area of research in SCM since the early 2000s (Shishodia et al., 2023). It is broadly understood as a supply chain’s ability to prepare for, respond to, recover from, or even improve after unexpected disruptions (Rice and Caniato, 2003; Christopher and Peck, 2004; Ponomarov and Holcomb, 2009; Hohenstein et al., 2015; Shishodia et al., 2023). SCRE practices are often categorized based on SCRE capabilities (e.g. flexibility, redundancy, agility, adaptability, visibility, collaboration (Rice and Caniato, 2003; Christopher and Peck, 2004; Pettit, Fiksel and Croxton, 2010; Wieland and Wallenburg, 2013)). The four most discussed SCRE strategies include: flexibility, redundancy, agility, and collaboration (Duong et al., 2024).

2.2. Circular and resilient supply chain performance measurement indicators

As SCM has evolved towards greater circularity and resilience, performance measurement systems have also been adapted to capture the complexities of these transformations. Traditional SCPMS primarily focused on efficiency, cost reduction, and service levels (Beamon, 1999; Beamon and Chen, 2001; Gunasekaran, Patel and McGaughey, 2004). With the increasing emphasis on circularity and resilience recently, scholars have proposed new frameworks to integrate circular economy (CE) principles and risk-mitigation strategies into performance assessments (Kazancoglu et al., 2021; Singh et al., 2023). Jain et al. (2018) devised a strategic framework to assess CSCM performance, emphasising three critical aspects in managing CSC: business models (strategic level), product/eco-design (tactical level), and supply chain management (operational level). Over 2022-2023, several articles proposed criteria for evaluating CSC performance, which share some common criteria such as, using sustainability metrics, material circulation, and waste minimization (Saroha, Garg and Luthra, 2022; Lahane et al., 2023; Vegter, van Hilleghersberg and Olthaar, 2023). The SCPMS for resilience has also undergone significant development. Most recent works measure resilience through various sets of indicators categorized based on SCRE capabilities (e.g. visibility, redundancy, agility, flexibility, collaboration,..) (Ali, Mahfouz and Arisha, 2017; Han, Chong and Li, 2020).

2.3. The supply chain practice view

To address these inter-organizational dynamics, we build on the Supply Chain Practice View (SCPV) (Carter, Kosmol and Kaufmann, 2017), an extension of Practice-Based View (PBV) (Bromiley and Rau, 2014; 2016). Unlike firm-centric theories, such as PBV or resource and capability management theories, such as, Resource-Based View (RBV) (Barney, 1991), Resource Orchestration Theory (ROT) (Barney et al., 2011; Sirmon et al., 2007), SCPV extends its focus to the broader supply chain, making it a promising theoretical lens for examining the relationship between inter-organizational SCM practices and firm performance, including both intra-organizational performance and inter-organizational performance (relational performance) (Carter, Kosmol and Kaufmann, 2017; Kosmol, Reimann and Kaufmann, 2019; Salmi et al., 2023).

The core tenet of SCPV emphasizes the relationship between inter-organizational practice and performance. The term “*inter-organizational practices*”, or can also called inter-firm activities, are defined as “*a specific activity or a set of activities that spans different formal organizations*

and that other supply chain dyads or networks can imitate.” (Carter, Kosmol and Kaufmann, 2017). This definitions highlights two key aspects: first, inter-firm practices must involve mutual engagement between two or more organizations (Salmi et al., 2023), and second, they should be imitable and transferrable across and among supply chains (Carter, Kosmol and Kaufmann, 2017; Wang et al., 2024). Example of such practices include joint product development, knowledge sharing among supply chain partners, electronic data interchange, supplier development, and product returns processing (Carter, Kosmol and Kaufmann, 2017). The second construct of SCPV is “*performance*”, which extends beyond traditional SCM metrics to incorporate sustainability-driven performance indicators. These dimensions, according to Carter et. al. (2017), include economic (e.g., operational metrics such as quality and delievery speed; market performance, such as, market share and customer satisfaction; and financial measures (e.g. return on investment, profit), along with social and environmental performance. Performance can be assessed at various levels of analysis, including individual organizations, SC dyads, and broader network (Carter, Kosmol and Kaufmann, 2017).

Building on the SCPV theory, developed by Carter et. al. (2017), our research examines inter-organizational practices that enhance both circularity and resilience performance in supply chains. CSCM and SCRE have recently emerged and studied widely as two prominent research streams within SCM, highlighting the potential for exploring imitable circular and resilient practices. In addition, while prior research has assessed the impact of circular or resilient practices on individual performance metrics (e.g., resilience (Singh et al., 2023), economic performance of circular practices (Farooque et al., 2022)), the combined performance measurement system of CRSCs remain unclear. The limitation in existing literature presents an opportunity for our research to contribute by addressing the intersection of circular and resilient supply chain practices in driving supply chain performance.

2. METHODOLOGY

2.2.Research design

As grounded in the SCPV theory, this research utilized multiple case studies to identify the imitable supply chain practices for better circularity and resilience performance within and across different supply chains. The application of multiple cases presents more robust evidence than a single case, enhancing the external validity of the research findings (Yin, 2018; de Lima, Seuring and Genovese, 2024), and allowing for a broader range of research questions to be explored and theoretical concepts to be elaborated upon (Eisenhardt and Graebner, 2007). A case study protocol was created to guide the data collection process (Yin, 2018).

This study is situated within the Vietnamese agri-food supply chains (AFSCs), a sector that faces growing pressure to transition towards circularity while simultaneously maintaining resilience in the face of climate change. Vietnam has been identified as one of the world’s leading contributors to air pollution and plastic waste (World Economic Forum, 2023; Asia News Network, 2025), necessitating a shift towards more sustainable and circular supply chain models. At the same time, the agri-food sector is among the most vulnerable industries to climate change (Tchonkouang, Onyeaka and Nkoutchou, 2024), with disruptions in weather patterns, resource scarcity, and supply chain instability posing significant risks. These dual challenges make Vietnamese AFSCs an ideal setting to investigate the practice-performance relationship in circular-resilient supply chains.

2.3.Data collection

Cases were selected using purposive sampling of polar types. We employed four supply chain cases (A, B, C, D) which are at different stages of circularity and resilience integration (low, middle, and high level of integration), firm sizes (SMEs or large corporations), types (domestic or multinational companies), and from varying agri-food sectors (**Table 1** *provides an overview of the SC cases*). Each supply chain includes a focal firm who is responsible to produce agri-food products and its direct suppliers or recyclers who involve in both circular and resilient collaborative practices.

We employed in-depth interviews as data collection method for this research. In each firm, we interviewed two to four people to ensure we collected the necessary information and data. The variation in the number of interviews per case is attributed to two key factors. First, SC-A required more interviews as it consists mainly of large corporations with complex operations, necessitating discussions with multiple individuals to gather comprehensive information. Second, with firms where only one or two interviews were conducted, the selected informants held key positions with broad responsibilities, enabling them to provide comprehensive insights into the phenomenon of interest. We also recruited three participants from external stakeholders of those supply chains, who play key roles in connecting multiple participants in supply chains to collaborate on CE projects. These external stakeholders, including higher education institutions and governmental and non-governmental organisations, referred to as Case E, provide insights into the broader perspectives of supply chains. As a result, this research recruited 23 interviewees and available documents (e.g. internal reports, publicly available reports and website content) as input for the data analysis to ensure data triangulation (Yin, 2018) (**Table 2**).

Table 1. Summary of case studies

Supply Chain Case Identities	Circularity level and characteristics	Resilience Level and characteristics	Types of company	Size	Industrial Sector
SC Case A	High	High	MNCs	Large	Food and Beverage
Focal Firm - AF	High	High	MNCs	Large	Food and Beverage
Suppliers - AS	High	High	Local Mainly	Large	Packaging and Recycling
SC Case B	Medium	High	Domestics	Large	Dairy/Nutritious
Focal Firm - BF	Medium	High	Domestics	Large	Dairy/Nutritious
SC Case C	Low	High	Domestics	Medium	Horticulture/Fruit/Processed Fruit
Focal Firm - CF	Low	Medium	Domestics	SMEs (<100 employees)	Horticulture/Fruit/Processed Fruit
Supplier - CS	Low	Medium	Local Mainly	SMEs (<100 employees, 150 bil.VND registered capital)	Packaging and Recycling
SC Case D	Low	Medium	Domestics	Medium	Horticulture/Fruit/Processed Fruit
Focal firm - DF	Low	Medium	Domestics	Medium (~200 employees)	Horticulture/Fruit/Processed Fruit
Supplier - DS	High	Medium	Local Mainly	Medium (~200 employees)	Aquatic products/Processing and Preservation
External Stakeholder E					
Educational Institution 1	One of the leading educational institutions in the South of Vietnam, that promotes sustainable development through research, policy advocacy and business solutions for circular economy practices.				
Educational Institution 2	One of the leading educational institutions in the North of Vietnam, that promotes sustainable development through executive educational programmes and business solutions for circular economy practices.				
International Organization	A global institution in partnering with Vietnamese authorities to promote circular economy by supporting policy integration, capability building, and circular collaborative practices (e.g. advocate for national action plan for CE, launched Vietnam Circular Economy Hub)				
Governmental Organization	Key governmental department who oversees the national plan for CE in Vietnam.				

Table 2. Summary of Interviewees

No.	Interviewee Identities	Supply Chain Cases	Supply Chain Case Relation	Years of experiences	Position	Interview duration (minutes)
1	AF1	SC-A	Focal Firm	11-15 years	Supply Chain Manager	60
2	AF2	SC-A	Focal Firm	16-20 years	Environmental Responsibility Managers	50
3	AF3	SC-A	Focal Firm	5 - 10 years	Sustainability Manager	180
4	AF4	SC-A	Focal Firm	5 - 10 years	Environmental Responsibility Executives	60
5	AS1	SC-A	Supplier	11-15 years	Supply Chain Manager	70
6	AS2	SC-A	Supplier	5 - 10 years	Sustainability Manager	60
7	AS3	SC-A	Supplier	11-15 years	Director of Sustainability Corporate Affair	30
8	AS4	SC-A	Supplier	5 - 10 years	Senior Executive Corporate Affair	60
9	BF1	SC-B	Focal Firm	11-15 years	R&D Senior Executive	30
10	BF2	SC-B	Focal Firm	5 - 10 years	Supplier Relationship Manager	60
11	BF3	SC-B	Focal Firm	11-15 years	Corporate Affair Manager - Sustainability	60
12	CF1	SC-C	Focal Firm	16-20 years	CEO	60
13	CF2	SC-C	Focal Firm	11-15 years	Sales Manager	50
14	CF3	SC-C	Focal Firm	16-20 years	Operations Manager	60
15	CS1	SC-C	Supplier	11-15 years	Deputy Director - Corporate Sale	45
16	DF1	SC-D	Focal Firm	>20 years	CEO	45
17	DF2	SC-D	Focal Firm	11-15 years	Operations Manager	45
18	DF3	SC-D	Focal Firm	>20 years	Procurement Manager	70
19	DS1	SC-D	Supplier	11-15 years	Strategy Manager	90
20	EF1	Case E	Educational Institution	>20 years	Professor, National Consultant	60
21	EF2	Case E	Educational Institution	11-15 years	Circular Economy Innovation - Manager	60
22	EF3	Case E	International Organization	11-15 years	Circular Economy - Manager	60
23	EF4	Case E	Governmental Organization	11-15 years	Senior Executive	60
Total interview time						~1425'
Average interview time						~62'

2.4.Data analysis

The data analysis process was conducted in parallel with data collection, allowing for an iterative approach to refine insights as new data emerged. We employed template analysis (King, 2004) and different coding techniques, including, in vivo, process, and holistic codings. Nvivo 14, a qualitative analysis software, was utilized for data analysis.

2.5.Research rigor

Research rigor was ensured by monitoring both internal and external validity and reliability throughout the study. The specific criteria and steps are presented in Table.

Table 3. Criteria and actions to ensure research rigor of the study

Criteria	Methods for ensuring research rigor
<i>Construct validity</i> The examination of whether research findings reflect the studied concepts	- The collected data were coded with the original definitions resulted from a systematic literature review of 175 peer-reviewed articles from 2004-2023; - We sent the transcripts and interview notes to the interviewees for content verification and validation; - Three researchers discuss throughout the data analysis process to ensure the highest agreement on data coding; - Measures to keep track of disagreements that emerged during coding were adopted; - Multiple sources of evidence were used (e.g interviews, and companies' reports);
<i>Internal validity</i> The strength of the causal or other “how” and “why” inferences made in a case study, in part bolstered by showing the absence of spurious relationships and the rejection of rival hypotheses	- The theoretical framework was constantly used to explain - The explanation was discussed with the research team and peers in scientific events for further refinement (see Acknowledgement)
<i>External validity</i> The extend to which the findings from a case study can be analytically generalized to other situations that were not part of the original study	- The case analysis was structured around priori themes that were derived from existing literature, ensuring that the investigation was grounded in established theories; - Purposive sampling was employed to select the cases that offer high generalization potentials. This approach ensured that the chosen cases were representative of different stages of circularity-resilient practices; - Multiple cases from varying structures, regions, sizes, and integration levels were adopted;
<i>Reliability</i> The consistency and repeatability of producing a case study's findings	- A well-structured study protocol was developed and implemented - Nvivo was used to store, manage, and retrieve data

Sources: Authors' own work, adapted from Yin and Campbell (2018)

3. FINDINGS

3.1. Inter-organizational practices for Circular-Resilient Supply Chains

This study identifies a triad of inter-organizational practices that collectively enhance circularity and resilience across supply chain (SC) stakeholders: (1) circular practices, (2) resilience-oriented practices, and (3) collaborative enablers. Notably, the data reveal a temporal sequencing where resilience practices are typically adopted first as part of procurement strategies before firms incorporate circular strategies. The logical connection among these three groups of inter-organisational practices is that firms often develop resilience-oriented practices first, *“as a part of procurement strategies”* (AF1), before incorporating circular practices. Once circular interventions are adopted, firms simultaneously integrate previously established resilient practices to ensure the long-term stability and effectiveness of circular operations. Collaboration practices are recognised as key enablers that facilitate the successful implementation of both circular and resilient practices across SC stakeholders.

3.1.1. Circular inter-firm practices as central decision-making priorities

The three most frequently mentioned collaborative practices among supply chain partners, that promote circular thinking across supply chains, are *product (re)design, process improvement, and network development*.

For agri-food products, **product design** contains two pivotal components: the inner product (e.g. taste formulation) and the outer packaging (e.g., material choice). The inner product design involves product formulation, which includes researching taste profiles and refining product formulas to maximize the efficient use of input materials. This process ensures that the product meets consumer preferences while optimizing unit costs (SC-A,-B,-C,-D). The research and development of inner products are primarily driven by consumers preferences, requiring **market research** to understand *“how consumers perceive the brand and what they desire so the company can adapt its product accordingly”* (AF3, DF3). The inner product can be considered a circular initiative mainly when reused materials are incorporated into new products. Examples include *“repurposing ginger waters, a by-product from candy production processes, to create a new health product used for massage”* (SC-D) or *“transforming shrimp by-products into bio-based fertilizers for use in agricultural farms, such as those operated by DF”* (DS1). While the inner product (re)design is primarily driven by the downstream factors, outer packaging- often regarded as *“the most obvious manifestation of product circularity”* (AF3)-originates from upstream materials innovations. These circular interventions in product packaging are primarily driven by **suppliers' expertise, consultation, and knowledge sharing**, as *“suppliers are highly advanced in packaging recycling technologies”* (AF1). Outer packaging contributes to product circularity through three key approaches: (i) *utilizing recycled materials or designing for R-imperative activities—mainly reuse and recycling*—such as reused returnable glass bottles, and utilizing recycled plastics and aluminum cans (SC-A), (ii) *incorporating environmentally friendly materials*, such as biodegradable or environmental-friendly bags (SC-D), and (iii) *designing for ease of disassembly to facilitate recycling and reuse*, such as use easy-removed bottle labels (SC-A). Since firms may not possess expertise in recycling or waste treatment, they typically rely on the involvement of supply chain partners—such as suppliers, collectors, and recyclers—to manage waste circulation and the end-of-life treatment of products (AF1). The design of both the inner product and outer packaging aims to drive sales and must align with market preferences, necessitating consumer involvement in the design process (AF3, DF3). In summary, while inner design aligns with consumer preferences and occasionally incorporates reused materials (e.g., repurposing ginger

water or shrimp by-products), outer packaging often reflects supplier-driven innovations that utilise recyclable or biodegradable materials. Firms rely heavily on upstream partners for waste treatment and circular packaging solutions.

Circular process improvement primarily focuses on inventory management, manufacturing processes, industrial waste classification, and product take-back systems. Resource-sharing initiatives (e.g., production consultation, forecasting support) further illustrate the operationalisation of circularity. These processes are two-way inter-firm practices that can be initiated by firms requesting changes from their suppliers or driven by suppliers as part of a service-centred business model for their buyers. In the former case, firms may engage in **suppliers' on-site waste classification**, as seen in the requirement of DS to its suppliers, which *requires shrimp heads and shells to be separated from general waste. Suppliers must establish a separate collection line to ensure these by-products are properly cleaned and stored in an air-conditioned room*". Industrial waste classification also involves indirect supply chain stakeholders, such as policymakers, since on-site waste classification must comply with government regulations for specific waste categories (AF2, AF4). Additionally, firms may also be involved in suppliers' **inventory management through Vendor-Managed Inventory - VMI**, as AF1 provided that *"We have adopted the Vendor-Managed Inventory (VMI) model with some of our key converters, though it has not yet been extended to recyclers—an initiative planned for the future. Under this model, our warehouse and the suppliers' warehouses are interconnected. The supplier maintains a portion of the stock, while we also hold part of the inventory, enabling a more coordinated and efficient supply chain."* Firms can also collaborate with suppliers to optimise material and energy efficiency. This includes **suppliers' consultation on manufacturing processes and deploying experts to buyers' factories** for on-site guidance and **process optimisation** (SC-Ai With corporate customers (distributors, wholesalers, and retailers) as well as end consumers, firms often play a role in designing mechanisms to facilitate used product collection. These mechanisms may include incentives, giveaways, or reward programs (SC-A). These mutual benefit mechanisms are also similar to the case of industrial waste collection at DS company, *"we commit to a long-term strategic waste collection agreement of 15-20 years, ensuring a stable income for our suppliers through the sale of their by-products, while we also secure a consistent supply of our input materials."* (DSI). This is further supported by BF2, who stated, *"Our supplier also develops mechanisms for resource sharing to achieve optimal profitability in their production process. They require us to participate in a certain inventory and forecasting-sharing process to qualify for a discount."*

Network development mainly involves the **establishment of waste and EoL product collection system**, and **supplier-involved practices**, such as supplier selection, and supplier management. While the development of collection systems is primarily focused on the downstream supply chain, supplier-involved practices aim to strengthen the upstream supply chain network, ensuring holistic circularity across the supply chain. **Collaboration with corporate customers** is recognised as a key enabler that *"can open up many new directions"* (AF3) in expanding collection systems. This includes partnerships with technology firms to develop reverse vending machine (RVM), and working with corporate customers or *"location owners"* to set up the RVM network in high-traffic commercial areas, such as shopping malls, and supermarkets. To successfully scale-up waste collection system, firms emphasize the need for *"regulation power"* (AF3) to establish a deposit return system (DRS). This legal framework may provide incentives for firms who develop RVM system or would require retailers to integrate a tax on on product consumption with a rebate into product price, allowing consumers to receive a refund when returning product packaging.

Upstream network development primarily focuses on selecting suppliers that meet specific circularity-related criteria, including (i) certification on specific recycling activities (AF2, AF4, DS1), (ii) the use of materials with high circularity potential (AF3), or (iii) eco-friendly practices, such as, generating the lowest CO₂ emissions among other contractors (AF2). This practice is exclusively implemented by the focal firm in SC-A, as it inherits global standards and has sufficient purchasing volume to impose such requirements on its suppliers. In contrast, focal firms in SC-B, C, and D – primarily local large companies or SMEs - do not prioritize these criteria due to the absence of stringent government regulations. Supplier management and development were also identified as key practices in building a circular supply network. This includes “more active practices” with first-tier suppliers to (i) enhance transparency, (ii) develop circular initiatives, and (iii) establish new production areas within industrial symbiosis - as AF1 noted, this approach allows suppliers to set up satellite factories near the focal firm's facility, fostering closer collaboration and resource efficiency.

3.1.2. Resilient inter-firm practices as a foundational support for enhancing circular practices

Data shows that resilient practices were adopted early on and later implemented alongside circular practices to enhance the stability of circular networks. As noted by AF1, “*resilience has long been an integral part of our procurement strategy*”; while AF’s transition towards greater sustainability and circularity has only gained momentum in the last five years, as highlighted by AF3. All SC cases incorporated resilient strategies to strengthen key capabilities, including *redundancy*, *flexibility*, *agility*, and *collaboration*. We discuss collaboration practices separately in a later section, as the data indicate that they serve as enablers for both circular and resilient practices.

Flexibility and **redundancy** strategies were often implemented together to ensure firms maintain diverse and excess capacity in product (re)design, process improvements, and network development. For instance, in formulating the inner product, AF ***maintained diverse product portfolios***, as noted by AF1, “*Since each product has a single formula and a fixed bill of materials (BOM), we maintain several alternative BOM with slightly different in taste profiles. This allows us to swiftly switch to an alternative BOM in case of disruptions while ensuring consistent quality and maintaining the desired taste profile. For instance, when substituting a raw material, the taste profile may change; therefore, we pre-validate alternative sets with consumers to ensure acceptance.*”. AF also ***diversified different supply sources by qualifying and allocating orders to different suppliers*** (AF1, AF2, AS1, BF2, CF1, DF1). For example, as shared by BF2, “*In such cases, we ensure stability by balancing allocations based on forecast planning, providing our back-up suppliers with a sufficient level to meet their minimum requirements. This allows both parties to maintain the contract and sustain a mutually beneficial relationship*”. Another example from SC-A, although AS has not yet provided a sufficient volume of recycled PET (rPET) to AF, they still allocate orders to AS and consider them a strategic partner, alongside foreign exporters, recognizing the importance of local suppliers in mitigating global risk. ***Maintaining redundancy in stock policies*** appears to be the most common approach among supply chain cases (AF1, AS1, BF2, CF3). Flexibility in contracts was another resilience practice used (SC-A,C,D) (e.g. special case contract (AF4), seasonal special case (CF1)). **Agility** is primarily employed to mitigate risks associated with global sourcing network for materials, such as rPET, by localizing supply sources and shortening supply chains. This point has been emphasized a lot by AF1 that “*Reliance on previous sources is no longer viable, requiring a diversified product portfolio based on sourcing options of the same quality in nearby countries. We are exploring innovations that primarily utilize sources within the Asia-Pacific region to further shorten the supply chain.*”. BF2 supported this view by explaining why BF collaborates with local suppliers, stated that: “*Packaging issues often*

arise beyond the supplier's control. Sourcing from geographically close domestic suppliers facilitates quicker problem resolution and more efficient handling.”. **Visibility to enhance agility** is primarily achieved through managing vendor lists and selecting key suppliers to share inventory information via the VMI approach.

3.1.3. Collaborative practices as enablers of circular and resilient supply chain integration

Collaboration among supply chain stakeholders was identified as a key enabler of successful circular-resilient practices. Key factors include leadership alignment and commitment to circularity and resilience, knowledge and information sharing, educational training, technological advancements and investments, and participation in government initiatives.

The first collaborative practice, **aligning the leadership commitment to circularity and resilience improvement**, through “creating win-win solutions” (DS1) or “top-to-top meetings” which can be organized annually, “providing a platform to discuss future directions, strategies, and risk management agreements” (AF1). This strategic alignment led to the formation of business associations comprising leading companies and recyclers (SC-A) to promote circular practices, drive circular and resilient initiatives among supply chain partners through knowledge sharing, and technology investment (AF1, BF2). Strategic alignment between firms and their corporate customers can also facilitate the development of waste classification and collection systems. AF3 shared that, “As our customer seeks to promote a sustainable lifestyle and actively demands it, recognizing this alignment with our agenda, we collaborate with them on packaging initiatives, developing RVM system, and in afforestation projects.”.

Knowledge and information sharing, along with educational training, emerged from the data as a key multi-stakeholder practice enabling circular-resilient activities. Firms engaged in knowledge and information sharing with its supply chain stakeholders through workshops, creating a sharing culture, and proactively informs supply chain partners about new regulations or global trends. For example, AF1 asserted that, “We hold annual workshops for all our suppliers to share emerging trends and new ideas.” and also “shared about future plan” (AF3). In SC-D, DF1 proudly highlighted DS’s culture of environmental responsibility and innovation in advancing the circular business models across its activities, especially in product (re)design. Regarding proactively sharing with SC stakeholders, DS1 noted that, “We recently held a session on carbon and net-zero for our customers. They were surprised to learn they were on the list for upcoming greenhouse gas audits, as they were previously unaware. They highly valued this information. In general, we openly share relevant insights, and in return, our partners invite us to industry workshops that might be beneficial for us.”. This practices also involve the resource sharing, such as, sending experts to suppliers/customers’ sites for consultation on production line/techniques (AF1, CF1, DS1). Additionally, interviewees strongly emphasized the urgent need to educate corporate partners (collectors) consumers on circular initiatives, such as waste classification and the important of using rPET, through educational training for informal collectors (AS), and brand voice communication campaigns (AF). Knowledge and information sharing enhanced resilient practices by facilitating risk-sharing, inventory shared-management, and forecasting sharing (SC-A, SC-B). As a multi-stakeholder practices, it also involved indirect SC stakeholders, such as higher educational institutions and governmental or non-governmental organizations. Firms often collaborate with universities to educate young generations on circular interventions (“We collaborate with universities to organize corporate-wide communication programs, conducting educational activities on recycling at institutions” (AF3)), or to engage in some research projects

(e.g. afforestation (AF2, BF3), circular business model (EF1)), which promote the circular practices of the whole supply chain.

Technology advancement and investment were also highlighted by our interviewees as a key enabler for enhancing circular and resilient practices by strengthening supply chain actors' capabilities. For example, AF1 and AF3 agreed that *"We are introducing an exclusive new technology and exploring investments with a converter or other local suppliers to enhance their capabilities."* Another example of supply chain technology advancement to enhance transparency and visibility (resilience) was shared by AS1, which highlight AS's investment in its suppliers' technological capabilities, *"We plan to automate data conversion for further-tier suppliers. Once implemented, the system will automatically balance input and output during sales and exports, enhancing traceability and origin tracking. The investment costs are fully our responsibility."*

The final collaborative efforts, which hold significant importance, connect direct SC actors with the indirect SC stakeholders in developing relevant governmental regulations through the **engagement among academia, industry, and government**. There are several ways for these interactions among SC stakeholders, including, conferences, dialogues, research projects, as shared by EF1.

3.2. Performance measurement system for circular-resilient supply chain

Supply chain partners, in our data, shared several performance outcomes of their circular and resilient practices. The summary of SCPMS synthesized through the data, is structured around key dimensions that evaluate the sustainability, circularity, and resilience of supply chains. In which, the Sustainability (further divided into environmental, economic, and social pillars) remained the most commonly used indicators for assessing the CRSC performance, following by circularity and resilience metrics. Each category consists of specific performance metrics that help assess circular and resilient practices and improve the sustainability, circularity and resilience of CRSC operations.

3.2.1. Sustainability Metrics

The economic sustainability of CSRSs was the most discussed metrics and mainly assessed using both financial and non-financial indicators. Financial metrics focused on *cost efficiency* and *revenue generation*, while non-financial indicators capture impacts on *consumer satisfaction* and *brand positioning*. One key financial indicator was *cost savings*, particularly from the reduction in *waste treatment and discharge cost* (DF1). CF1 also supported this by emphasizing that waste collectors help companies eliminate treatment expense: *"It almost replace the cost associated with waste treatment. Collectors retrieve the agricultural by-products of our production and repurpose as fertilizer or animal feed, creating a mutually beneficial, win-win situation for both parties."* Additionally, new revenue streams emerged through *the sale of products with recycled material contain* (DF1, DF2), or by selling waste in bulk to collectors (AF2). This financial benefit highlighted the economic viability of circular initiatives, making waste a valuable resource rather than a cost burden. Beyond financial gains, non-financial indicators played a crucial role in measuring CRSC performance. *Consumer satisfaction* was assessed through participating in waste classification and collection and recycling initiatives, such as *take-back programs* and collection systems or by the *sale growth* of products with recycled material contain. Companies actively track sales and brand growth to ensure that adopting circular strategies does not negatively impact their market performance: *"We always consider whether consumers will accept new circular products by tracking sales growth and ensuring it does not reduce sales volume."* (AF1). Improved brand

positioning was another vital metric (AF, BF, DF, DS), as companies that integrated circularity into their business models strengthened their market presence, evidenced by increased *sales of circular products*, consumer engagement in sustainability programs, and market research. As AF1 proudly stated that, “*Our company is the ‘engine winner’ on something called sustainability and environment friendliness*”. BF3 also agreed on the brand positioning impact of circular initiatives, particularly in how these efforts are communicated through marketing campaigns. BF3 emphasized that brand positioning is measured by public recognition, specifically through the number of viral articles on media platforms, which serve as an indicator of public interest and engagement with the brand: “*Brand recognition is measured by the number of viral articles on media platforms, helping us gauge public interest in the brand.*”.

Environmental performance is a critical component of supply chain sustainability. The key environmental metrics focus on reducing carbon emissions, minimizing waste, and improving resource efficiency. Life Cycle Assessment (LCA) is used to measure the *carbon footprint* (AF4), particularly in terms of *greenhouse gas (GHG) emissions*. Efficient use of materials is another important metric, assessing the *total amount of materials consumed* during production processes. Additionally, waste reduction is monitored by tracking the *waste rate* (measured in tons or kilograms) (AF2, AF3), and the *wastewater recycling rate*, which indicates the volume of wastewater recycled as a proportion of total water use (AF2, AF4). An additional indicator considers the *water-holding capacity of soil after afforestation* (AF2), which can contribute to long-term environmental benefits.

Social sustainability focuses on job creation, health, and social well-being. Metrics include the *number of job opportunities or better income* generated within the supply chain, particularly in recycling and waste management sectors. Employee and consumer well-being are also considered, particularly in relation to *occupational health and safety standards* (BF1, BF3). Furthermore, the system accounts for *income opportunities in informal labor sectors*, such as *scrap collectors* (AF3, AS1) and *remote area workers* (DF1), who play an essential role in material recovery and recycling processes.

3.2.2. Circularity Metrics

Product (re)design plays a key role in enhancing circularity. The first metric focuses on the *use of recycled materials*, measuring the *volume* (AF1, DS1) and *rate of recycled content* (AF2, AF3) in production, as well as the diversity of materials incorporated into circular systems. Additionally, the *number of circular product innovations* (AF1, DF1) is tracked to assess advancements in circular product development. Another key metric is *product lifetime*, which evaluates how long recycled products, such as *bottle-to-bottle recycling cycles*, remain in use before disposal (AF4, AS2).

The only metric was used to measure the process improvement is the *efficiency of material use*, often measured through financial indicators such as *cost savings* associated with optimized resource utilization. This finding shows a lack of performance measurement for these important circular initiatives.

Circular supply chains also require adjustments at the network level. The *number or percentage of suppliers certified for eco-friendly practices* is a crucial metric. Additionally, the effectiveness of *collection systems* is assessed through metrics such as *the number of bottles collected through recycling machines* (AF3), *the total volume (in tons) of recycled materials* (AF1), and the *quality of waste collected* (AF3), which directly impacts the feasibility of material reuse.

3.2.3. Resilience Metrics

Resilience in supply chains is strengthened by redundancy, ensuring that critical materials and products are consistently available. A key metric in this area is the *inventory level of circular materials and products*, which helps mitigate risks related to material shortages or disruptions. However, this metric was only measured between AF and its converters, while shows the missing in other sampled firms and supply chain cases.

Flexibility is essential for adapting to market changes and disruptions. Metrics in this category include *increasing the local supply volume of rPET*, which reduces dependence on imported materials (AF1, BF2, AF3). Additionally, the system tracks the *number of recyclers and qualified vendors* (AF2, BF2, DS1) to ensure a robust and adaptable supply chain network.

Agility is another crucial aspect of resilience, focusing on the ability to respond quickly to changing conditions. Two key metrics include *lead time from collection to recycling*, (AF1, BF2), which measures the efficiency of material processing, and *time-to-market for circular innovations*, which assesses how quickly new circular products or projects are introduced (AF1).

3.2.4. Collaboration Metrics

Supply chain collaboration is a key driver of both circularity and resilience, yet it remains one of the least measured aspects in performance evaluation. *Information sharing* is one of the fundamental aspects, assessing the extent to which firms *exchange data on inventory levels* (AF1, BF2), *new product development* (AF1, AF3), *strategic planning, events* (AF1, AF3), and *forecasting* (BF2). Effective information sharing enhances *visibility and coordination*, reducing uncertainties in circular operations. The second metric, *decision synchronization*, evaluates the level of alignment between supply chain partners in terms of *joint planning, collaborative projects, and the establishment of business associations or shared platforms*. This includes *communication strategies, educational initiatives, and promotional campaigns* that drive engagement and cooperation (AF3, AS1, AS2).

3.3. Summarizing the findings

Figure 1 presents the summary of findings, highlighting the key propositions of our study. Propositions 1 and 2 address Research Question 1 and the final proposition addresses Research Question 2.

Proposition 1: Resilient practices are developed first to mitigate risks before being adopted alongside circular practices to enhance long-term circularity. This finding emphasizes the sequential relationship between resilience and circularity in supply chains. Resilience strategies, such as supplier redundancy, flexibility, and agility, provide stability, allowing firms to integrate circular initiatives like product (re)design, process improvement, and network development effectively.

Proposition 2: Collaboration is a critical enabler of both resilient and circular practices, particularly through leadership commitment, knowledge sharing, technological advancements, and government engagement. Strong leadership alignment ensures strategic direction, while cross-sector collaboration facilitates knowledge transfer and innovation. These multi-stakeholder efforts enhance operational efficiency and foster circular-resilient transformations across supply chains.

Proposition 3: The integration of resilient, circular, and collaborative practices contributes to improving overall supply chain performance. Firms that effectively implement these inter-organizational strategies experience greater stability, resource efficiency, and risk mitigation,

ultimately strengthening their competitive advantage. However, to achieve a well-rounded supply chain, firms must balance four key performance dimensions: sustainability, circularity, resilience, and collaboration. While sustainability focuses on environmental, economic, and social impact, circularity emphasizes waste reduction and resource recovery, resilience ensures supply chain adaptability, and collaboration fosters strategic alignment and coordinated decision-making.

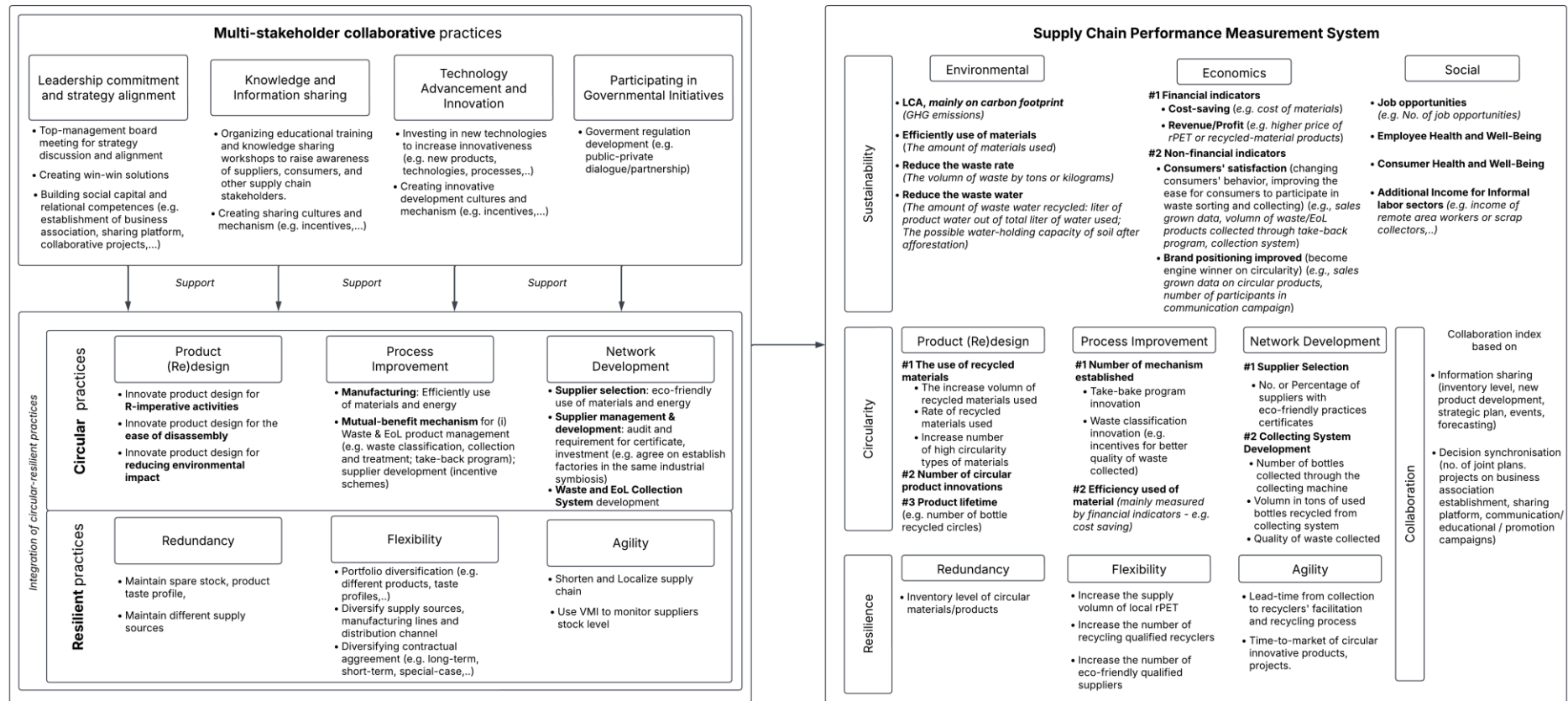


Figure 1. Circular-Resilience Supply Chain Practice – Performance Framework

4. DISCUSSION

4.1. Inter-organisational Practices – Performance Relationship

Our findings demonstrate that inter-organizational practices—namely circular, resilience-oriented, and collaborative strategies—play a crucial role in enabling both circularity and resilience within supply chains. These insights reinforce and extend prior work on sustainable supply chain collaboration (Jain, Jain and Metri, 2018; Vegter, van Hillegersberg and Olthaar, 2023), particularly by highlighting the sequential development of resilience as a foundational capability that supports the subsequent implementation of circularity initiatives. Specifically, resilience strategies (e.g., supplier redundancy, flexibility in sourcing, and inventory buffers) were found to be early-stage procurement priorities, which later facilitated circularity-oriented strategies. This observation is consistent with the resilience literature, where redundancy and flexibility are recognised as foundational capabilities for supply chain stability (Christopher and Peck, 2004; Han, Chong and Li, 2020).

The study contributes to existing literature by aligning the identified circularity-related practices with the strategic, tactical, and operational performance levels proposed by Jain et al. (2018). At the *Operational level*, process improvements, particularly in waste classification and vendor-managed inventory (VMI), align with material efficiency and waste minimisation indicators (Lahane et al., 2023). At the *tactical level*, product (re)design contributes to circularity performance metrics, such as the percentage of recycled material use, product lifetime extension, and innovation in circular products. *Strategically*, network development, particularly through supplier selection and expansion of the collection system, directly supports resilience metrics (e.g., supplier qualification, recycling efficiency, and redundancy in supplier networks).

Additionally, resilient inter-firm practices, such as dual sourcing, lead-time reduction, and localised procurement, align with SCRE performance criteria discussed by Han et al. (2020), offering firms stability that enables the successful deployment of circular strategies. For example, localised sourcing of recycled PET (rPET) enhances both flexibility and circularity by mitigating risks associated with global disruptions, which is consistent with the findings of Santander et al. (2020). Furthermore, collaborative mechanisms, such as strategic alignment, knowledge-sharing platforms, and technological co-investment, emerged as critical enablers. However, current SCPMS frameworks rarely incorporate metrics that assess the effectiveness of such collaborations, indicating a significant gap in performance evaluation systems.

4.2. Theoretical contributions to SCPV theory and SCM research

This study contributes to the theoretical development of the Supply Chain Practice View (SCPV) (Carter, Kosmol and Kaufmann, 2017), by extending its application to the integrated domains of circular and resilient supply chains. While SCPV emphasises that supply chain practices shape firm-level outcomes, our study shows that multi-stakeholder, inter-organisational practices are key drivers of systemic transformation.

We propose a phased adoption model wherein firms first develop resilience-oriented practices, aimed at risk mitigation, before engaging in circular strategies that focus on resource efficiency and environmental value creation. Our findings reveal interdependence among the two domains:

- Resilience strategies (e.g., redundancy, diversification, and flexible contracts) provide the operational stability necessary for circularity.

- Circularity-driven initiatives (e.g., closed-loop systems, product redesign) benefit from and build upon these resilience capabilities.
- Collaborative practices bridge the two domains by fostering alignment, risk-sharing, and joint innovation among supply chain actors.

By identifying interdependencies between resilience and circularity practices, this study extends SCPV's scope beyond individual firm practices to multi-stakeholder supply chain transformations. This extended view suggests that SCPV should evolve to account for the temporal sequencing of practice adoption and the relational dynamics inherent in collaborative transformation processes.

4.3. Managerial and policy implications

4.3.1. Managerial Implications

The findings highlight the need for managers to integrate resilience and circularity efforts rather than treating them as separate initiatives. Many firms in this study developed resilience-oriented strategies—such as supplier diversification, redundancy, and flexible sourcing—before transitioning toward circularity. This suggests that managers should *leverage existing resilience capabilities to facilitate circular economy transitions*. For example, supplier redundancy and flexible sourcing can help mitigate risks associated with material shortages, making it easier for firms to adopt circular product (re)design and closed-loop practices. Additionally, *investing in collaborative networks*, such as business association establishment, supplier development programs, and circular procurement alliances, can enhance both resilience and circularity performance by ensuring stable access to secondary materials and sustainable inputs.

A key managerial takeaway from this study is the *importance of supplier engagement* in circular and resilient supply chain development. The findings indicate that circularity-driven supplier selection criteria—such as recyclability potential, closed-loop capabilities, and emissions reduction—should be incorporated alongside traditional cost and quality considerations. Moreover, mechanisms like *vendor-managed inventory (VMI) models and knowledge-sharing platforms* can improve supply chain coordination, reducing inefficiencies in both circular and resilient operations. Firms should also prioritize *collaboration with downstream partners*, including distributors, retailers, and consumers, to develop effective product take-back systems and waste recovery programs.

Another critical insight is the gap in current SCPMS. While companies track key sustainability indicators such as waste reduction and cost savings, there is *limited measurement of collaboration effectiveness*—a crucial enabler of circular and resilient supply chains. To address this, firms should adopt more comprehensive SCPMS frameworks that explicitly assess four dimensions: (1) *circularity outcomes*, such as material recovery rates and circular product innovations, (2) *resilience performance*, including redundancy levels, local sourcing impact, and lead-time reductions, (3) *collaboration effectiveness*, particularly in knowledge sharing, policy engagement, and technology co-development, along with (4) traditional *sustainability metrics*. By integrating these performance metrics, firms can gain a more holistic understanding of their supply chain's sustainability, circularity, and resilience progress.

4.3.2. Policy Implications

The findings also emphasize the critical role of policy interventions in fostering circular and resilient supply chains. Regulatory frameworks should be designed to *incentivize businesses to integrate resilience and circularity practices*, such as through tax benefits, subsidies, and

regulatory support for sustainable procurement. Governments can encourage companies to adopt circular business models by providing financial incentives for investments in reverse logistics infrastructure, recycling technologies, and secondary material markets. Furthermore, strengthening extended producer responsibility (EPR) schemes can hold firms accountable for the end-of-life management of their products, reinforcing circular supply chain goals, while enhancing the resilience of supply chains and the whole system.

Policymakers should also focus on *standardizing supply chain performance measurement guidelines* to ensure greater transparency in corporate sustainability efforts. Additionally, *public-private partnerships or triple helix model development* (partnership among academia, industry, and government) can play a crucial role in accelerating circular supply chain adoption and strengthening supply chain resilience by facilitating multi-stakeholder collaboration, information, technology and resource sharing.

Finally, *consumer education and engagement programs* should be integrated into circular economy policies. The study highlights the importance of consumer participation in waste classification, take-back schemes, and sustainable consumption behaviors. Public awareness campaigns and incentives, such as deposit return systems (DRS) and recycling rewards, can increase consumer involvement in circular initiatives.

5. CONCLUSION

This study advances the understanding of how inter-organizational practices integrate circularity and resilience within supply chains. The findings revealed that firms adopt resilience strategies first, such as supplier redundancy, flexibility, and agility, before transitioning to circular practices like product (re)design, process improvement, and network development. This sequential development underscores the interdependence between resilience and circularity, where resilience capabilities provide stability, enabling firms to implement circular strategies effectively. Collaborative practices across supply chain stakeholders are key enablers for those circular and resilient practices. Additionally, the study identifies key performance measurement indicators covers sustainability, circularity, resilience, and collaboration, emphasizing the need to update SCPMS to capture collaboration effectiveness in circular-resilient supply chains.

Our research is limited to the Vietnamese context, examining eight firms and three organizations, which may restrict the generalizability of the findings. Future research should explore diverse geographical regions and various industry sectors to capture broader insights into circular-resilient supply chain dynamics. Additionally, while this study identifies key inter-organizational practices and their role in circularity and resilience, it does not establish a comprehensive linkage between specific practices and performance outcomes. Future studies should conduct in-depth empirical analyses to quantify the impact of individual circular and resilience practices on supply chain performance metrics, enhancing practical and theoretical understanding.

REFERENCES

Ali, A., Mahfouz, A. and Arisha, A., 2017. Analysing supply chain resilience: integrating the constructs in a concept mapping framework via a systematic literature review. *Supply Chain Management: An International Journal*, 22(1), pp.16–39. <https://doi.org/10.1108/scm-06-2016-0197>.

Asia News Network, 2025. Hanoi tops the world again for air pollution. [online] 8 Jan. Available at: <https://asianews.network/hanoi-tops-the-world-again-for-air>

pollution/#:~:text=Another%20Vietnamese%20city%2C%20Ho%20Chi,186%2C%20classified%20as%20'Unhealthy.>.

Barney, J., 1991. Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1), pp.99–120. <https://doi.org/10.1177/014920639101700108>.

Barney, J.B., Ketchen, D.J., Wright, M., Sirmon, D.G., Hitt, M.A., Ireland, R.D. and Gilbert, B.A., 2011. Resource Orchestration to Create Competitive Advantage: Breadth, Depth, and Life Cycle Effects. *Journal of Management*, 37(5), pp.1390–1412. <https://doi.org/10.1177/0149206310385695>.

Batista, L., Bourlakis, M., Smart, P. and Maull, R., 2018. In search of a circular supply chain archetype – a content-analysis-based literature review. *Production Planning & Control*, 29(6), pp.438–451. <https://doi.org/10.1080/09537287.2017.1343502>.

Beamon, B.M., 1999. Measuring supply chain performance. *International Journal of Operations & Production Management*, 19(3), pp.275–292. <https://doi.org/10.1108/01443579910249714>.

Beamon, B.M. and Chen, V.C.P., 2001. Performance analysis of conjoined supply chains. *International Journal of Production Research*, 39(14), pp.3195–3218. <https://doi.org/10.1080/00207540110053156>.

Bromiley, P. and Rau, D., 2014. Towards a practice-based view of strategy. *Strategic Management Journal*, 35(8), pp.1249–1256. <https://doi.org/10.1002/smj.2238>.

Bromiley, P. and Rau, D., 2016. Missing the point of the practice-based view. *Strategic Organization*, 14(3), pp.260–269.

Carter, C.R., Kosmol, T. and Kaufmann, L., 2017. Toward a Supply Chain Practice View. *Journal of Supply Chain Management*, 53(1), pp.114–122. <https://doi.org/10.1111/jscm.12130>.

Christopher, M. and Peck, H., 2004. Building the Resilient Supply Chain. *International Journal of Logistics Management*, 15(2), pp.1–14. <https://doi.org/10.1108/09574090410700275>.

De Lima, F.A. and Seuring, S., 2023. A Delphi study examining risk and uncertainty management in circular supply chains. *International Journal of Production Economics*, [online] 258. <https://doi.org/10.1016/j.ijpe.2023.108810>.

Duong, L., Sanderson, H.S., Phillips, W., Roehrich, J.K. and Uwalaka, V., 2024. Achieving resilient supply chains: managing temporary healthcare supply chains during a geopolitical disruption. *International Journal of Operations & Production Management*, [online] ahead-of-print(ahead-of-print). <https://doi.org/10.1108/IJOPM-03-2024-0243>.

Eisenhardt, K.M. and Graebner, M.E., 2007. Theory Building From Cases: Opportunities And Challenges. *Academy of Management Journal*, 50(1), pp.25–32. <https://doi.org/10.5465/amj.2007.24160888>.

- Farooque, M., Zhang, A., Liu, Y. and Hartley, J.L., 2022. Circular supply chain management: Performance outcomes and the role of eco-industrial parks in China. *Transportation Research Part E: Logistics and Transportation Review*, [online] 157. <https://doi.org/10.1016/j.tre.2021.102596>.
- Farooque, M., Zhang, A., Thürer, M., Qu, T. and Huisingh, D., 2019. Circular supply chain management: A definition and structured literature review. *Journal of Cleaner Production*, 228, pp.882–900. <https://doi.org/10.1016/j.jclepro.2019.04.303>.
- Graessler, S., Guenter, H., de Jong, S.B. and Henning, K., 2024. Organizational change towards the circular economy: A systematic review of the literature. *International Journal of Management Reviews*, 26(4), pp.556–579. <https://doi.org/10.1111/ijmr.12367>.
- Gunasekaran, A., Patel, C. and McGaughey, R.E., 2004. A framework for supply chain performance measurement. *International Journal of Production Economics*, 87(3), pp.333–347. <https://doi.org/10.1016/j.ijpe.2003.08.003>.
- Han, Y., Chong, W.K. and Li, D., 2020. A systematic literature review of the capabilities and performance metrics of supply chain resilience. *International Journal of Production Research*, 58(15), pp.4541–4566. <https://doi.org/10.1080/00207543.2020.1785034>.
- Hohenstein, N.-O., Feisel, E., Hartmann, E. and Giunipero, L., 2015. Research on the phenomenon of supply chain resilience. *International Journal of Physical Distribution & Logistics Management*, 45(1/2), pp.90–117. <https://doi.org/10.1108/ijpdlm-05-2013-0128>.
- Ivanov, D., 2024. Transformation of supply chain resilience research through the COVID-19 pandemic. *International Journal of Production Research*, pp.1–22. <https://doi.org/10.1080/00207543.2024.2334420>.
- Jain, S., Jain, N.K. and Metri, B., 2018. Strategic framework towards measuring a circular supply chain management. *Benchmarking: An International Journal*, 25(8), pp.3238–3252. <https://doi.org/10.1108/BIJ-11-2017-0304>.
- Kazancoglu, Y., Ekinici, E., Mangla, S.K., Sezer, M.D. and Kayikci, Y., 2021. Performance evaluation of reverse logistics in food supply chains in a circular economy using system dynamics. *Business Strategy and the Environment*, 30(1), pp.71–91. <https://doi.org/10.1002/bse.2610>.
- King, N., 2004. Using Templates in the Thematic Analysis of Text. In: *Essential Guide to Qualitative Methods in Organizational Research*. [online] 1 Oliver's Yard, 55 City Road, London EC1Y 1SP United Kingdom: SAGE Publications Ltd. pp.256–270. <https://doi.org/10.4135/9781446280119.n21>.
- Kirchoff, J.F. and Falasca, M., 2022. Environmental differentiation from a supply chain practice view perspective. *International Journal of Production Economics*, 244, p.108365. <https://doi.org/10.1016/j.ijpe.2021.108365>.
- Kosmol, T., Reimann, F. and Kaufmann, L., 2019. You'll never walk alone: Why we need a supply chain practice view on digital procurement. *Journal of Purchasing and Supply Management*, [online] 25(4). <https://doi.org/10.1016/j.pursup.2019.100553>.

- Lahane, S., Kant, R., Shankar, R. and Patil, S.K., 2023. Circular supply chain implementation performance measurement framework: a comparative case analysis. *Production Planning and Control*. [online] <https://doi.org/10.1080/09537287.2023.2180684>.
- Leising, E., Quist, J. and Bocken, N., 2018. Circular Economy in the building sector: Three cases and a collaboration tool. *Journal of Cleaner Production*, 176, pp.976–989. <https://doi.org/10.1016/j.jclepro.2017.12.010>.
- de Lima, F.A., Seuring, S. and Genovese, A., 2024. How to enhance circular supply chains? Aligning R-imperatives, uncertainty management and sustainability. *International Journal of Operations & Production Management*, 44(4), pp.836–858. <https://doi.org/10.1108/IJOPM-11-2022-0708>.
- Negri, M., Cagno, E., Colicchia, C. and Sarkis, J., 2021. Integrating sustainability and resilience in the supply chain: A systematic literature review and a research agenda. *Business Strategy and the Environment*, 30(7), pp.2858–2886. <https://doi.org/10.1002/bse.2776>.
- Pettit, T., Fiksel, J. and Croxton, K., 2010. Ensuring Supply Chain Resilience: Development of a Conceptual Framework. *Journal of Business Logistics*, 31, pp.1–21. <https://doi.org/10.1002/j.2158-1592.2010.tb00125.x>.
- Ponomarov, S.Y. and Holcomb, M.C., 2009. Understanding the concept of supply chain resilience. *The International Journal of Logistics Management*, 20(1), pp.124–143. <https://doi.org/10.1108/09574090910954873>.
- Rice, J.B., Jr and Caniato, F., 2003. Building a secure and resilient supply network. *Supply Chain Management Review*, 7(5), pp.22–30.
- Rogan, J., Fürstenberg, F. and Wieland, A., 2022. Shaping the Transition from Linear to Circular Supply Chains. In: L. Bals, W.L. Tate and L.M. Ellram, eds. *Circular Economy Supply Chains: From Chains to Systems*. [online] Emerald Publishing Limited. pp.69–87. <https://doi.org/10.1108/978-1-83982-544-620221004>.
- Salmi, A., Quarshie, A.M., Scott-Kennel, J. and Kähkönen, A.-K., 2023. Biodiversity management: A supply chain practice view. *Journal of Purchasing and Supply Management*, 29(4), p.100865. <https://doi.org/10.1016/j.pursup.2023.100865>.
- Santander, P., Cruz Sanchez, F.A., Boudaoud, H. and Camargo, M., 2020. Closed loop supply chain network for local and distributed plastic recycling for 3D printing: a MILP-based optimization approach. *Resources, Conservation and Recycling*, 154, p.104531. <https://doi.org/10.1016/j.resconrec.2019.104531>.
- Saroja, M., Garg, D. and Luthra, S., 2022. Analyzing the circular supply chain management performance measurement framework: the modified balanced scorecard technique. *International Journal of System Assurance Engineering and Management*, 13, pp.951–960. <https://doi.org/10.1007/s13198-021-01482-4>.

Shishodia, A., Sharma, R., Rajesh, R. and Munim, Z.H., 2023. Supply chain resilience: A review, conceptual framework and future research. *The International Journal of Logistics Management*, 34(4), pp.879–908. <https://doi.org/10.1108/ijlm-03-2021-0169>.

Singh, A., Dwivedi, A., Agrawal, D. and Chauhan, A., 2023. A framework to model the performance indicators of resilient construction supply chain: An effort toward attaining sustainability and circular practices. *Business Strategy and the Environment*. [online] <https://doi.org/10.1002/bse.3563>.

Sirmon, D.G., Hitt, M.A. and Ireland, R.D., 2007. Managing Firm Resources in Dynamic Environments to Create Value: Looking inside the Black Box. *The Academy of Management Review*, 32(1), pp.273–292.

Tchoukouang, R.D., Onyeaka, H. and Nkoutchou, H., 2024. Assessing the vulnerability of food supply chains to climate change-induced disruptions. *Science of The Total Environment*, 920, p.171047. <https://doi.org/10.1016/j.scitotenv.2024.171047>.

Vegter, D., van Hillegersberg, J. and Olthaar, M., 2023. Performance measurement system for circular supply chain management. *Sustainable Production and Consumption*, 36, pp.171–183. <https://doi.org/10.1016/j.spc.2023.01.003>.

Wang, M., Chan, R.Y.K., Hwang, K.-S. and Lim, M.K., 2024. The influence of learning orientation on corporate sustainability: Serial mediation of supply chain practices. *European Management Journal*. [online] <https://doi.org/10.1016/j.emj.2024.01.007>.

Wieland, A. and Wallenburg, C.M., 2013. The influence of relational competencies on supply chain resilience: a relational view. *International journal of physical distribution & logistics management*, 43(4), pp.300–320. <https://doi.org/10.1108/IJPDLM-08-2012-0243>.

World Economic Forum, 2023. How to defeat the plastic tide threatening the ASEAN region's green growth. [online] 10 Oct. Available at: <[https://www.weforum.org/stories/2023/10/defeat-plastic-tide-threatening-asean-green-growth/#:~:text=The%20Philippines%20alone%20leaked%20356%2C371,\)%20and%20Thailand%20\(22%2C806\).>](https://www.weforum.org/stories/2023/10/defeat-plastic-tide-threatening-asean-green-growth/#:~:text=The%20Philippines%20alone%20leaked%20356%2C371,)%20and%20Thailand%20(22%2C806).>)>.

Yin, R.K., 2018. *Case study research and applications: Design and Method*. 6th ed. SAGE Publications.