

**Sustainable Leadership and Supply Chain Management in the Manufacturing Sector: A  
Multiple-Case Study**

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## **Abstract**

This qualitative multiple-case study explored how senior leadership in mid-sized manufacturing firms in the United States engages in sustainable supply chain management to address the persistent problem of limited leadership involvement in advancing sustainability practices. The study examined how this lack of engagement constrains operational efficiency, regulatory compliance, and long-term competitiveness, while also affecting broader societal goals related to environmental and social responsibility. Guided by transformational leadership theory, stakeholder theory, and the triple bottom line framework, the research examined leadership strategies, stakeholder collaboration, and cultural dynamics that facilitate or hinder the adoption of sustainability. Data were collected through semi-structured virtual interviews with 17 senior leaders, including chief executive officers, chief operating officers, and supply chain directors, and analyzed using thematic analysis in NVivo. The findings revealed that leaders overcame adoption challenges by diversifying their supplier base, integrating sustainability into strategic decision-making, and leveraging innovation to build resilience. Leadership effectiveness was enhanced by long-term vision, adaptive decision-making, and collaborative approaches, while cultural alignment was strengthened through shared purpose, values, and recognition systems. The study concludes that senior leadership is central to embedding sustainability in supply chains, with implications for practice that emphasize leadership development, cross-sector collaboration, and supplier partnerships. It also recommends future research across industries and leadership levels, using longitudinal and mixed-method approaches to explore how organizational culture interacts with external pressures in advancing sustainable supply chain management.

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## Table of Contents

Chapter 1: Introduction.....	1
Statement of the Problem.....	3
Purpose of the Study.....	4
Introduction to Theoretical Framework.....	6
Introduction to Research Methodology and Design (Nature of the Study).....	9
Research Questions.....	10
Significance of the Study.....	11
Definitions of Key Terms.....	13
Summary.....	14
Chapter 2: Literature Review.....	16
Theoretical Framework.....	19
Sustainable Leadership.....	28
Sustainable Supply Chain Management.....	36
Role of Senior Leadership in Sustainable Supply Chain Management.....	46
Summary.....	49
Chapter 3: Research Method.....	51
Research Methodology and Design (Nature of the Study).....	52
Population and Sample.....	54
Instrumentation.....	57
Study Procedures.....	59
Data Analysis.....	60
Assumptions.....	64
Limitations.....	66
Delimitations.....	68
Ethical Assurance.....	70
Summary.....	72
Chapter 4: Findings.....	74
Trustworthiness of the Data.....	75
Results.....	78
Comparison of Results to the Literature Review.....	112
Summary.....	115
Chapter 5: Discussion, Recommendation, and Study Summary.....	116
Discussion.....	119
Recommendations for Practice.....	152
Recommendations for Future Research.....	154
Study Summary.....	156

References.....	158
Appendix A List of Abbreviations.....	210
Appendix B Key Findings and Research Gaps in Sustainable Supply Chain Leadership.....	213
Appendix C Participant Safeguards and Data Security Protocol.....	215
Appendix D Interview Question Protocol.....	217
Appendix E Recruitment Email.....	222
Appendix F Social Media Recruitment Message.....	224
Appendix G Consent Form.....	225
Appendix H Pre-Screening Questionnaire.....	228

## List of Tables

Table 1 Participant Demographics.....	79
Table 2 Themes and Subthemes Emerging from RQ1.....	83
Table 3 Themes and Subthemes Emerging from RQ2.....	92
Table 4 Themes and Subthemes Emerging from RQ3.....	103

## List of Figures

Figure 1. Intersections between leadership, stakeholders, TBL, and organizational culture in SSCM.....	8
Figure 2. Triadic Theoretical Framework.....	20
Figure 3. Characteristics of Sustainable Leadership.....	33
Figure 4. Components of Sustainable Supply Chain Management.....	40

## Chapter 1: Introduction

Sustainable leadership (SL) and sustainable supply chain management (SSCM) have become pivotal in contemporary organizational strategy, particularly for mid-sized manufacturing firms (MSMFs) in the United States (Abbas, 2024; Asuah et al., 2024). These firms, representing a significant segment of the manufacturing landscape, face increasing pressure to align their operations with economic, environmental, and social sustainability imperatives (Kuzior et al., 2023; Tritto et al., 2024). SSCM, as a framework, integrates these dimensions, offering a pathway to meet stakeholder expectations, comply with regulatory standards, and achieve competitive advantage (Siems et al., 2023). The integration of these dimensions aligns with global initiatives such as the United Nations Sustainable Development Goals (UNSDG), which emphasize the critical role of organizations in fostering sustainable development (Srivastava et al., 2024). The adoption of SSCM across MSMFs remains inconsistent, highlighting the need to address the barriers impeding its effective implementation (Goncalves et al., 2024).

The evolving sustainability demands in global markets influence MSMFs, which operate at the intersection of economic constraints, environmental concerns, and social accountability (Martins et al., 2022; Mengistu et al., 2024). These firms have the potential to drive sustainability innovation, but fragmented supply chain relationships, resource limitations, and challenges in leadership engagement present significant barriers to their progress (Alayon et al., 2022; Begum et al., 2022; Gupta et al., 2020). Senior leadership plays a pivotal role in overcoming these challenges by shaping organizational culture, fostering collaboration, and driving strategic alignment with sustainability goals (Leena et al., 2024). Visionary leadership plays a critical role in fostering innovation and overcoming resistance, significantly impacting SSCM practices

(Abbas, 2024; Asuah et al., 2024). Stakeholder collaboration further enhances SSCM adoption rates by up to 40%, underscoring the importance of aligning diverse interests within the supply chain (Siems et al., 2023). The lack of strong leadership engagement poses significant barriers to SSCM adoption across MSMFs (Goncalves et al., 2024).

Despite the recognized importance of leadership in SSCM, significant gaps remain in understanding how senior leaders operationalize sustainability initiatives within MSMFs (Sun & Xi, 2024; Wang & Liu, 2022). Much of the existing literature has focused on external drivers such as regulatory frameworks and stakeholder pressures (Goncalves et al., 2024; Kuzior et al., 2023). Internal dynamics, particularly the interplay between leadership styles, organizational culture, and stakeholder collaboration, are less understood (Cui & Wang, 2022; Shahzad et al., 2024). Environmental, social, and governance (ESG) performance has been shown to increase innovation outputs by 20% and reduce debt financing costs by 15%, highlighting the economic benefits of adopting sustainability practices (Yang et al., 2024; Zhao et al., 2024). Addressing these internal dynamics is essential for equipping MSMFs with the tools and strategies needed to navigate sustainability transitions effectively (Block et al., 2024; De et al., 2024; Takacs et al., 2022).

Filling these gaps is essential for equipping MSMFs with actionable strategies and also for advancing scholarly understanding of how leadership dynamics influence the adoption of sustainability practices (Ren et al., 2024). Focus on senior leadership's role in driving SSCM bridges the theoretical and practical perspectives, addressing a critical area of need for the manufacturing sector. Additionally, it responded to the growing prominence of sustainability as a competitive advantage in global markets (Bari et al., 2024; Nadia et al., 2023). Firms that integrate sustainability into their operations enhance regulatory compliance and position

themselves as leaders in innovation and resilience, with transformational leadership improving supply chain resilience by 28% and employee pro-environmental behavior by 20% (Ren et al., 2024; Tang et al., 2022; Xin et al., 2024). For MSMFs, sustainability is no longer an ancillary consideration but a strategic imperative that requires leadership capable of fostering cultural alignment and navigating complex stakeholder relationships (Nureen et al., 2023).

Existing research has highlighted leadership's pivotal role in SSCM but has often focused on large organizations or specific industries, with limited attention to MSMFs (Goncalves et al., 2024). Moreover, limited attention has been paid to the internal mechanisms through which leadership influences SSCM adoption, particularly in mid-sized firms operating with constrained resources (Abbas, 2024; Asuah, 2024). Addressing this gap is critical for identifying strategies that support the operationalization of SSCM and foster sustainable organizational cultures.

### **Statement of the Problem**

The problem addressed in this study was the lack of senior leadership engagement in implementing SSCM practices within MSMFs in the United States (Asuah et al., 2024; Jum'a et al., 2022; Naureen et al., 2023). This lack of involvement has hindered progress in meeting sustainability goals, increased regulatory compliance risks, and resulted in missed opportunities for operational and environmental advancements (Srivastava, 2024). While senior leadership has been critical for driving SSCM (Fritz & Ruel, 2024), many organizations have struggled to convert leadership commitments into actionable strategies aligned with global sustainability frameworks, such as the UNSDGs (Jia et al., 2019).

Recent studies have indicated that only 35% of mid-sized firms integrate leadership-driven sustainability initiatives (Saygili et al., 2023). Such limitations impede the consistent adoption of SSCM practices, eroding competitive advantage and operational efficiency in a

market increasingly driven by sustainability imperatives (Anane et al., 2023). These firms have faced significant barriers, including inefficient resource allocation (Ahmad & Karadas, 2021), weak alignment with suppliers (Huo et al., 2021), and low employee motivation to adopt sustainable practices (Feng et al., 2023; Xin et al., 2024). Also, recent studies by Yang et al. (2024) and Zhao et al. (2024) have shown that SL strategies can significantly enhance ESG performance, leading to a 20% increase in innovation outputs and a 15% reduction in debt financing costs.

Despite the growing literature on SSCM and SL, gaps have remained in understanding how the lack of senior leadership engagement impacts the successful implementation of SSCM practices within MSMFs (Ahmad et al., 2023). Prior studies have highlighted the need for actionable frameworks to guide leaders in integrating sustainability goals into their daily operations, while addressing challenges in resource optimization and organizational alignment (Prieto et al., 2024; Vidal et al., 2023). The aim was to identify leadership strategies that enhance SSCM practices, providing both theoretical insights and practical solutions to strengthen sustainability efforts in MSMFs.

### **Purpose of the Study**

The purpose of this qualitative multiple-case study was to examine how senior leadership in MSMFs in the United States can address the lack of engagement in implementing SSCM practices by overcoming related challenges and adopting strategies that enhance sustainability initiatives (Abbas, 2024; Goncalves et al., 2024). The research focused on identifying the approaches leaders use to address barriers such as limited resources, fragmented supply chain relationships, and stakeholder alignment, which often impede the adoption of SSCM. Furthermore, it aimed to explore the factors that enable senior leaders to convert sustainability

commitments into actionable and measurable outcomes, emphasizing the role of leadership styles and decision-making processes (Sajjad et al., 2023). Additionally, attention was given to organizational culture elements, such as values, norms, and internal collaboration, which either support or hinder leadership engagement in SSCM practices, offering a comprehensive understanding of the internal dynamics that influence sustainability initiatives (Visamitanan & Assarut, 2024).

Data were collected through 17 semi-structured interviews conducted using video conferencing platforms (Grynshyna et al., 2023; Moreno et al., 2024) through Zoom (2025). The process involved recruiting 17 senior leaders with varying levels of engagement in SSCM implementation within MSMFs to explore the factors influencing their involvement and the impact of their leadership on sustainability outcomes. Participants were selected using purposeful sampling (Palinkas et al., 2013; Stratton, 2024), ensuring they hold senior leadership titles such as CEO, COO, or supply chain director and possessed significant experience in SSCM. Recruitment involved a multi-step approach, which involved reaching out to professional networks, industry associations, and sustainability-focused organizations; sending targeted invitations via social media platforms like LinkedIn; and emailing firms known for their sustainability efforts. Participants were also screened to confirm their direct involvement in SSCM-related decision-making and implementation. The research setting included 17 diverse MSMFs across the United States, representing firms with varying degrees of SSCM maturity to ensure a comprehensive understanding of the topic.

The study employed thematic analysis, supported by qualitative data analysis software NVivo, to enhance the integrity and rigor of the data analysis process (Allsop et al., 2022). This approach identified patterns and themes from participants' narratives, emphasizing their

perceptions, challenges, and strategies in implementing SSCM practices. By leveraging such tools, the study aimed to ensure systematic and reliable qualitative data analysis while preserving the richness of participant insights.

### **Introduction to Theoretical Framework**

This study was guided by the transformational leadership theory (TLT), stakeholder theory, and the triple bottom line (TBL) theory to explore the role of senior leadership in SSCM within MSMFs in the United States (Asif et al., 2024; Dagestani et al., 2024). Transformational leadership Theory, conceptualized by Bass (1985), emphasizes the ability of leaders to motivate and inspire their teams by articulating a compelling vision, encouraging individuals, and fostering innovation to exceed expectations (Begum et al., 2022; Hassan & Mohamed, 2024; Ren et al., 2024). In the context of SSCM, this theory provided critical insights into how senior leaders influence organizational alignment with sustainability goals, effectively manage change, and cultivate a culture that supports operational and environmental advancements (Feng et al., 2024).

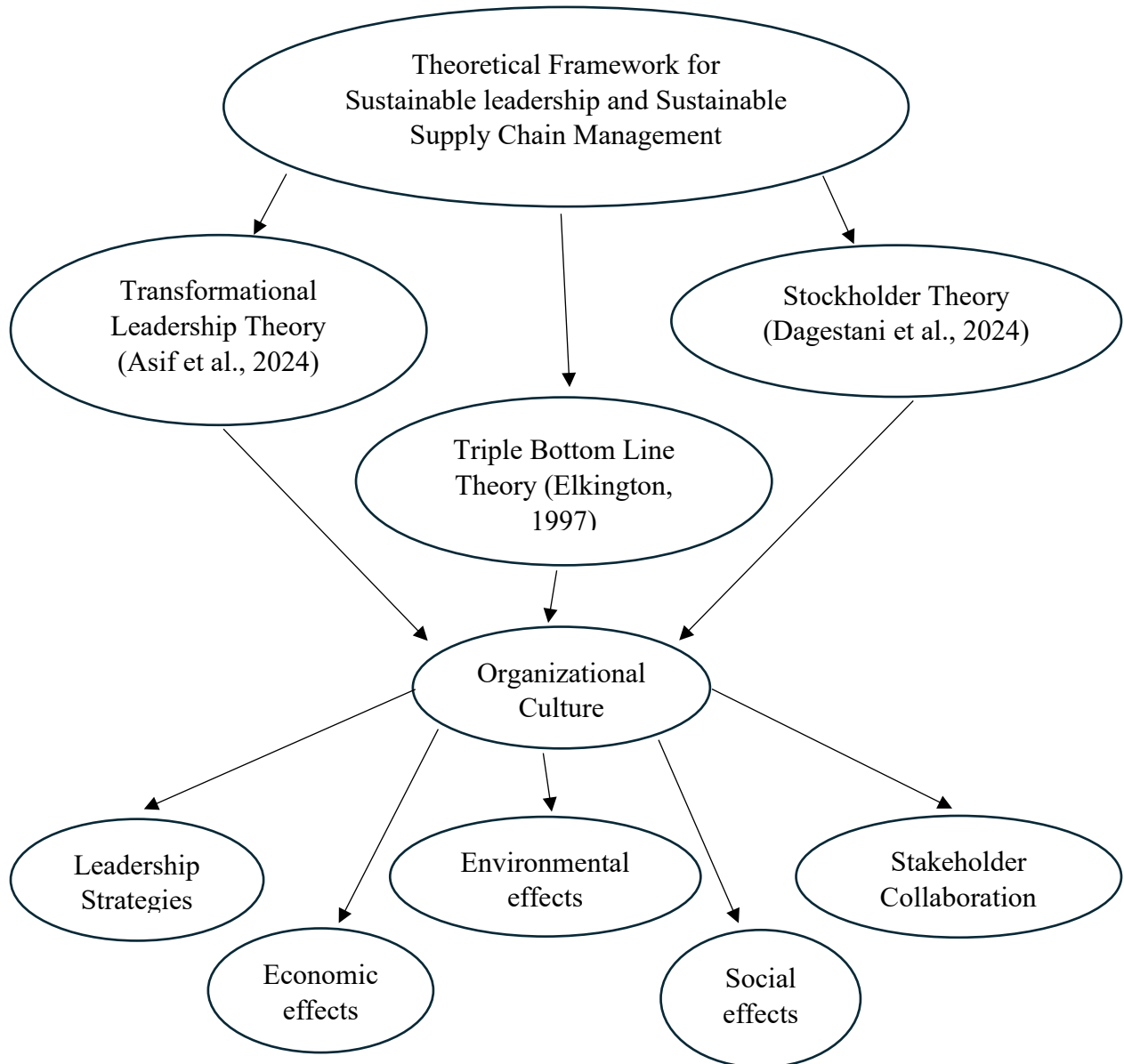
Complementing this perspective with stakeholder theory, introduced by Freeman (1984), underscores the significance of addressing the interests and needs of diverse stakeholders, including suppliers, employees, customers, and regulatory agencies, in organizational decision-making processes (Dagestani et al., 2024). Stakeholder theory offered a valuable lens for understanding how senior leadership can balance and harmonize competing priorities to strengthen sustainability practices, ensuring that all relevant parties contribute to achieving long-term organizational efficiency and environmental stewardship (Perez et al., 2023; Valentinov, 2023). This theory was particularly relevant in SSCM, where leadership must navigate complex stakeholder relationships to create value across the supply chain (Siems & Seuring, 2021).

The triple bottom line (TBL) theory, introduced by Elkington (1997), provided an overarching lens that integrates the economic, environmental, and social dimensions of sustainability (Aytac et al., 2023). TBL emphasizes that successful SSCM requires organizations to align economic, environmental responsibility, and social equity (Kuzior et al., 2023). By embedding TBL into this framework, the study recognized the need to balance these dimensions to achieve holistic sustainability outcomes. TBL also helped to evaluate the performance of leadership strategies and stakeholder collaboration in driving SSCM, ensuring that organizational goals were met without compromising environmental and social obligations (Aytac et al., 2023; Srivastava et al., 2024).

These three frameworks form a robust theoretical foundation that analyzes the interconnected constructs of leadership strategies, stakeholder collaboration, TBL dimensions, and organizational culture, as shown in Figure 1 below. Leadership strategies represent the actions and behaviors senior leaders adopt to implement SSCM practices effectively (Prabhu & Srivastava, 2023). Stakeholder collaboration examines the extent to which leaders align stakeholder interests with organizational sustainability objectives (Jayashree et al., 2022). TBL dimensions provide a comprehensive framework to evaluate outcomes across economic, environmental, and social spheres (Elkington, 1997). Lastly, organizational culture focused on internal values, norms, and practices that either facilitate or impede SSCM adoption (El Baz & Iddik, 2021).

**Figure 1**

*Interconnections Between Leadership, Stakeholder, TBL, and Organizational Culture in SSCM.*



*Note.* Figure 1 demonstrates the interconnections between leadership strategies, stakeholder collaboration, TBL dimensions, and organizational culture in SSCM. Leadership strategies align stakeholder interests with sustainability goals, while organizational culture supports or constrains

SSCM practices. The TBL framework emphasizes the integration of economic, environmental, and social dimensions for achieving sustainable outcomes.

### **Introduction to Research Methodology and Design (Nature of the Study)**

This qualitative methodology and multiple-case study design investigated the role of senior leadership in SSCM within MSMFs in the United States. The multiple-case study approach was chosen because it allows for an in-depth exploration of leadership practices and their influence on SSCM implementation within real-world organizational contexts (Halkias & Newbert, 2020). This design was particularly well-suited for examining variations and commonalities across multiple firms, providing a comprehensive understanding of the phenomena under investigation (Howard, 2021).

The multiple-case study (MCS) method was utilized to explore real-life leadership dynamics and their impact on SSCM practices, drawing insights from the perspectives and experiences of senior leaders within MSMFs. MCS design helped to capture the complexity of leadership strategies, stakeholder collaboration, and organizational culture as they interact with SSCM implementation in diverse settings (Allsop et al., 2022). The emphasis was placed on understanding how leadership behaviors influence the adoption of sustainability initiatives across different firms.

Individual interviews were conducted with participants, and a sample size of 17 participants was deemed sufficient for achieving data saturation in a qualitative study (Guest et al., 2020). According to the National University's qualitative research guidelines, a minimum of 15 interviews was necessary to ensure that sufficient depth and diversity of perspectives were captured (Bakari et al., 2025). Participants were recruited through targeted outreach on LinkedIn, professional networks, and industry associations. Firms known for their sustainability efforts

were contacted via email invitations, and participants were asked to provide referrals for additional qualified candidates, a process referred to as the snowball sampling method (Gierczyk, 2023). The eligibility criteria for participants included the following:

- Serving in senior leadership roles such as CEO, COO, or supply chain director within MSMFs.
- A minimum of 2 years of direct involvement in SSCM implementation.
- Active participation in sustainability-related decision-making within their organization.
- Willingness and availability to participate in a 45-minute or longer virtual interview session via Microsoft Teams or Zoom.

After participant selection, 17 semi-structured interviews were conducted virtually through secure Zoom video conferencing platforms. All interviews were recorded with the participants' full disclosure and consent. Transcriptions of the interviews were imported into NVivo 15 for thematic analysis. Data analysis followed Braun and Clarke's six-step process, a robust and user-friendly approach for identifying patterns and themes within qualitative data (Maguire & Delahunt, 2017).

Techniques such as member checking, data triangulation, and audit trails were employed to enhance the research's trustworthiness (Amankwaa, 2016; Mcleod, 2024). Supplementary data, including organizational reports, sustainability disclosures, and supply chain performance metrics, were reviewed to corroborate interview findings. The study adhered to ethical guidelines, ensuring participant confidentiality and secure data storage throughout the research process (Taquette et al., 2022).

### **Research Questions (RQ)**

The following research questions aligned the purpose of this qualitative multiple-case study with the identified study problem. Exploring how MSMFs overcome challenges related to adopting SSCM practices was critical for understanding the barriers these organizations face. Investigating the factors influencing senior leadership's ability to translate sustainability commitments into actionable strategies provided insights into the leadership dynamics that were essential for effective SSCM implementation. Examining the organizational culture factors that support or hinder senior leadership engagement in SSCM practices helped to uncover the internal elements that drive or constrain sustainability efforts.

***RQ1***

How do mid-sized manufacturing firms overcome challenges related to the adoption of SSCM practices?

***RQ2***

What factors influence senior leadership's ability to translate sustainability commitments into actionable strategies in mid-sized manufacturing firms?

***RQ3***

What organizational culture factors support or hinder the engagement of senior leadership in SSCM practices?

**Significance of the Study**

This study was significant for its potential to contribute both theoretically and practically to the field of SL and SSCM, particularly within MSMFs in the United States. Theoretically, it advances the integration of TLT, stakeholder theory, and the TBL framework, offering a robust lens for understanding how leadership dynamics influence SSCM adoption. Existing research has highlighted gaps in operationalizing sustainability practices within resource-constrained MSMFs.

This study addressed these gaps by exploring how senior leadership navigates internal barriers, such as fragmented supply chains and limited resources, to foster sustainable organizational cultures and align with TBL dimensions (Goncalves et al., 2024; Nabi et al., 2023).

Practically, the study provided actionable insights for leaders and practitioners, emphasizing leadership strategies that align organizational goals with SSCM implementation and balance TBL dimensions. For instance, findings from recent studies demonstrate that transformational leadership significantly enhances SSCM adoption (Abbas, 2024; Hassan & Mohamed, 2024), and that stakeholder collaboration increases SSCM adoption rates by 40% (Siems et al., 2023). Additionally, TBL-based approaches have been shown to increase ESG performance, improving innovation outputs by 20% and reducing debt financing costs by 15% (Yang et al., 2024; Zhao et al., 2024). These insights equip MSMFs with the tools to bridge the gap between sustainability commitments and practical execution, improving regulatory compliance, enhancing stakeholder relationships, and achieving financial resilience. Addressing the problem of insufficient senior leadership engagement, the study offered pathways for MSMFs to overcome systemic challenges, adopt TBL-driven practices, and achieve long-term sustainability objectives, thereby maintaining competitive positioning in global markets (Kuzior et al., 2023; Tritto et al., 2024).

By completing this study, positive outcomes such as enhanced supply chain resilience, alignment with TBL dimensions, and improved adherence to global sustainability initiatives, such as the UNSDG, were realized (Feng et al., 2024; Martins et al., 2022; Srivastava et al., 2024). These contributions underscore the transformative potential of leadership in shaping sustainable practices, fostering innovation, and creating shared value across the supply chain.

Furthermore, the findings provided actionable frameworks for MSMFs to integrate sustainability into their core operations, driving long-term competitive advantage and societal impact.

## **Definitions of Key Terms**

### ***Circular Economy (CE)***

A circular economy is an economic system aimed at eliminating waste and the continual use of resources through closed-loop systems that minimize resource input, waste, and environmental impact (Loviscek, 2025).

### ***Environmental, Social, and Governance (ESG)***

ESG refers to a set of standards for a company's operations that investors use to screen potential investments, focusing on sustainability practices in environmental impact, social responsibility, and governance structures (Yang et al., 2024).

### ***Mid-Sized Manufacturing Firms (MSMFs)***

MSMFs are organizations that fall between small and large enterprises in terms of revenue and employee size, typically characterized by annual revenues of \$10 million to \$1 billion and a workforce of 100–999 employees (Tritto et al., 2024; US Census Bureau, 2023).

### ***Stakeholder Collaboration***

Stakeholder collaboration refers to the process of engaging and aligning diverse stakeholder interests, including suppliers, employees, and customers, to achieve common sustainability goals in supply chain practices (Freeman & McVea, 2001; Iyere & Misopoulos, 2022).

### ***Sustainable Leadership (SL)***

Sustainable leadership involves practices by leaders that aim to integrate long-term environmental, social, and economic considerations into decision-making processes to achieve organizational sustainability (Abbas, 2024).

### ***Sustainable Supply Chain Management (SSCM)***

SSCM is the management of material, information, and capital flows, as well as cooperation among companies along the supply chain, while integrating sustainability goals related to economic, environmental, and social dimensions (Siems et al., 2023).

### ***Transformational Leadership (TL)***

Transformational leadership is a leadership approach that inspires and motivates followers to exceed expectations by fostering innovation, articulating a compelling vision, and addressing the emotional and intellectual needs of individuals (Ren et al., 2024).

### ***Triple Bottom Line (TBL)***

The triple bottom line is a sustainability framework that integrates three dimensions of organizational performance: economic (profit), environmental (planet), and social (people) outcomes. It emphasizes the need for businesses to balance these dimensions to achieve long-term sustainability goals (Elkington, 1997; Srivastava et al., 2024).

### ***United Nations Sustainable Development Goals (UNSDG)***

UNSDGs are a collection of 17 interlinked global goals designed to be a "blueprint to achieve a better and more sustainable future for all" by addressing global challenges such as poverty, inequality, climate change, and environmental degradation (Srivastava et al., 2024).

### **Summary**

The foundational elements of the study focused on SL and SSCM within MSMFs in the United States (Abbas, 2024; Asuah et al., 2024). The significance of sustainability as a critical

imperative for MSMFs, outlining the economic, environmental, and social pressures driving the adoption of SSCM practices (Kuzior et al., 2023; Tritto et al., 2024). This study highlighted the pivotal role of senior leadership in fostering organizational alignment with sustainability goals, addressing challenges such as fragmented supply chains and limited resources (Gonçalves et al., 2024; Gupta et al., 2020).

Key theoretical frameworks, including transformational leadership theory (Ren et al., 2024; Tang et al., 2022), stakeholder theory (Freeman & McVea, 2001; Iyere & Misopoulos, 2022) and TBL theory (Elkington, 1997), were discussed as the guiding lenses for exploring the interplay between leadership, organizational culture, and stakeholder collaboration. The study emphasized on the existing gaps in the literature, particularly the lack of understanding of internal leadership dynamics and practical strategies for SSCM implementation in resource-constrained MSMFs (Yang et al., 2024; Zhao et al., 2024). By addressing these gaps, the study aimed to bridge theoretical insights with actionable solutions for enhancing SSCM adoption. To ensure relevance and concurrency, Chapter 2 expands on the foundation laid in this chapter by reviewing relevant literature to provide a broader perspective on the study. This comprehensive analysis highlights the importance of the research and justifies its focus by addressing existing gaps in knowledge.

## Chapter 2: Literature Review

The problem addressed in this study was understanding the impact of the lack of senior leadership engagement in implementing Sustainable Supply Chain Management (SSCM) practices within mid-sized manufacturing firms (MSMFs) in the United States (Asuah et al., 2024; Jum'a et al., 2022; Naureen et al., 2023). This was a problem because many MSMFs struggle to convert leadership commitments into actionable strategies, resulting in fragmented supply chain sustainability efforts, operational inefficiencies, and an increased risk of non-compliance with environmental regulations (Jia et al., 2019). The purpose of the study was to critically examine the role of senior leadership in SSCM implementation within MSMFs. Without clear leadership alignment with global sustainability frameworks such as the United Nations Sustainable Development Goals (UNSDG), these firms faced competitive disadvantages, financial penalties, and reputational risks. Furthermore, the failure to implement sustainable leadership-driven supply chain practices led to higher resource wastage, supplier misalignment, and missed opportunities for cost savings and innovation, all of which threaten long-term business viability (Koliby et al., 2024; Wang et al., 2022). Studies indicate that only 35% of mid-sized firms integrate leadership-driven sustainability initiatives, leading to inconsistent adoption of SSCM practices and diminishing their competitive advantage in an increasingly sustainability-driven market (Saygili et al., 2023; Anane et al., 2023).

The lack of understanding and absence of senior leadership engagement in SSCM has profound consequences, affecting regulatory compliance, operational efficiency, and financial sustainability (Raynolds, 2024; Karma et al., 2024). When leadership fails to prioritize sustainability initiatives, companies face greater regulatory scrutiny, risking non-compliance with environmental laws and industry standards (Siems et al., 2022). This exposes firms to

substantial financial penalties, operational delays, and reputational damage, reducing their competitive edge in an increasingly sustainability-driven market (Karma et al., 2024; Siems et al., 2022; Srivastava, 2024). A 2024 Global Sustainability Report revealed that 70% of mid-sized firms lack a structured sustainability policy, highlighting a significant leadership gap (PWC, 2024; Setyaningsih et al., 2024). Furthermore, 78% of executives cited financial constraints, lack of expertise, and internal resistance as primary barriers to SSCM adoption (Sachs et al., 2024). Without proper guidance and strategic commitment from senior leadership, firms struggle to allocate resources effectively, integrate sustainability into long-term business models, and align supply chain practices with global sustainability frameworks (Denhere et al., 2023; Qalati et al., 2024). Additionally, firms with weak sustainability leadership experience a 20% increase in supply chain disruptions, often caused by inefficient resource allocation, supplier misalignment, and low employee engagement (Ahmad & Karadas, 2021; Huo et al., 2021; Feng et al., 2023; Xin et al., 2024). These challenges threaten business continuity, resulting in missed opportunities for innovation, cost savings, and improved environmental performance (Shekarian et al., 2023). Addressing these leadership deficiencies was crucial for ensuring resilient and sustainable supply chain operations (Feng et al., 2024; Surajit et al., 2024). This chapter critically examines the theoretical framework, key themes related to sustainable leadership and SSCM, and identifies research gaps through a structured review of relevant literature.

This study's theoretical framework integrates Transformational Leadership (TL) theory, Stakeholder Theory (ST), and the Triple Bottom Line (TBL) framework to analyze the impact of senior leadership engagement on SSCM implementation in MSMFs. Transformational Leadership Theory (Bass & Avolio, 1994) highlights how inspiring and proactive leadership drives sustainability-oriented decision-making, a key factor missing in many MSMFs struggling

to implement SSCM (Srivastava, 2024). Stakeholder Theory (Freeman, 1984) provides insights into how leadership engagement affects suppliers, employees, regulators, and customers and how weak leadership results in supplier misalignment, inefficient resource use, and low employee motivation (Feng et al., 2023; Xin et al., 2024). The Triple Bottom Line (TBL) framework (Elkington, 1997) emphasizes the financial, environmental, and social consequences of leadership disengagement in sustainability efforts, reinforcing that MSMFs without strong leadership risk regulatory penalties, reduced innovation, and operational inefficiencies (Saygili et al., 2023).

The literature review used academic databases and search engines to ensure comprehensive coverage of peer-reviewed research and industry insights on SL and SSCM. The primary databases accessed through the National University Library included ProQuest Dissertations & Theses, EBSCOhost, ScienceDirect, JSTOR, and IEEE Xplore. These databases provided access to scholarly and peer-reviewed journal articles, ensuring a rigorous academic foundation for examining the role of senior leadership in SSCM within MSMFs. The National University Library's resources enabled targeted keyword searches and cross-referencing to identify relevant empirical studies, theoretical frameworks, and best practices in the field. Additionally, Google Scholar was utilized as a supplementary source for peer-reviewed articles not available through university databases. To maintain a high standard of academic rigor, 80% of the journal data used in this literature review was sourced from scholarly databases within the university library, ensuring access to peer-reviewed journal articles and empirical studies. The remaining 20% of sources comprised government reports, industry white papers, and corporate sustainability reports, providing real-world applications and practical insights into leadership engagement in SSCM.

Literature search parameters ensure a comprehensive and focused selection of relevant studies. The search process involved keyword searches, Boolean operators (AND, OR, NOT), and citation tracking to refine the selection of academic sources. Key search terms included “Sustainable leadership AND supply chain management,” “Transformational leadership AND sustainability adoption,” “Senior leadership engagement AND SSCM implementation,” “Barriers to sustainability leadership in mid-sized firms,” “Stakeholder Theory AND sustainable supply chain,” “Triple Bottom Line (TBL) AND corporate sustainability,” “Regulatory compliance AND sustainable supply chains,” and “Challenges of SSCM in MSMFs AND leadership strategies.” To ensure the research base was current and relevant, the majority of selected articles were published between 2020 and 2025. However, seminal studies from earlier years were incorporated where necessary to provide historical and theoretical context. Additionally, Google searches were used to gather industry reports, case studies, and business publications that provided practical insights into leadership’s role in sustainable supply chain operations.

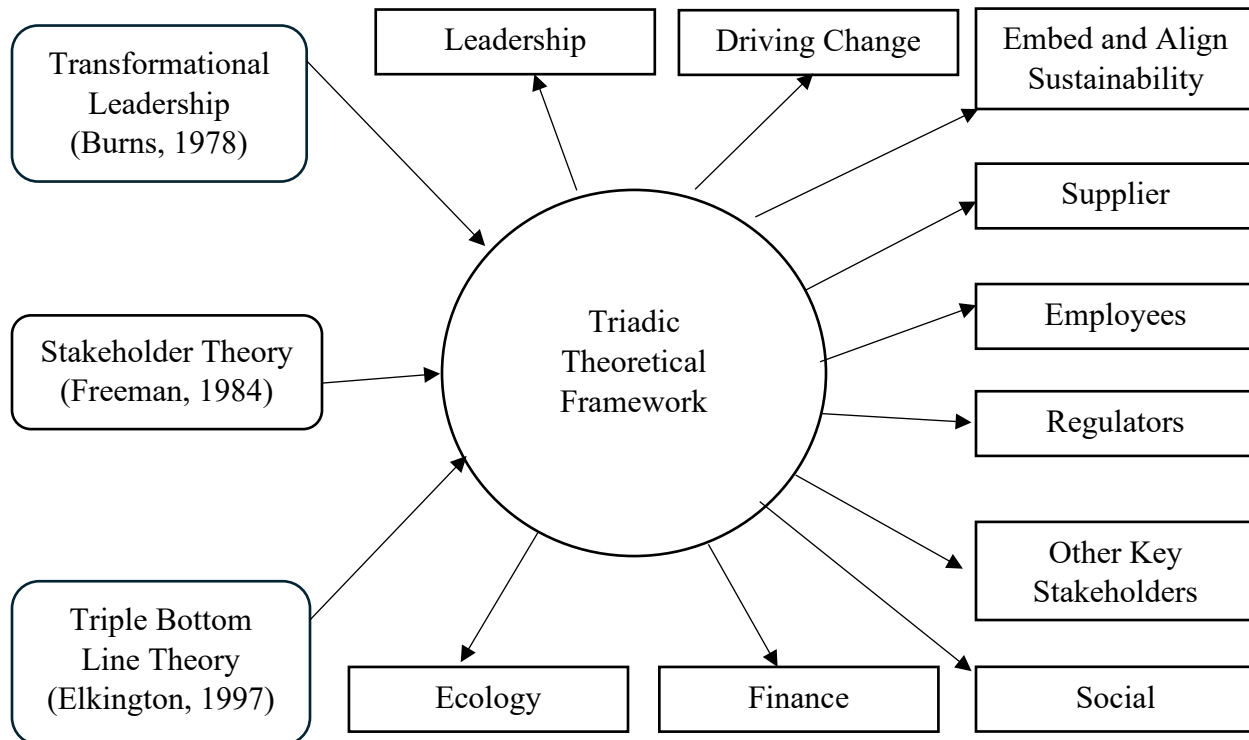
### **Theoretical Framework**

The framework crafted for this study was based on the Triadic Theoretical Framework illustrated in Figure 2, which integrates three interconnected theories known as Transformational Leadership Theory, Stakeholder Theory, and the Triple Bottom Line framework to examine the role of senior leadership engagement in SSCM implementation within MSMFs. This framework was an original conceptualization developed for this research, drawing from established theoretical foundations to provide a structured lens for analyzing leadership-driven sustainability initiatives in the supply chain context, as illustrated in Figure 2. A detailed table summarizing the three theoretical perspectives, Transformational Leadership Theory, Stakeholder Theory, and the Triple Bottom Line Framework, is provided in Appendix B to support the conceptual foundation

of this study. The Transformation Leadership (TL) Theory emphasized how visionary leadership can inspire and drive sustainability-oriented decision-making (Shahzad et al., 2022; Tang et al., 2022). The second component, Stakeholder Theory (ST), provided a lens for understanding how leadership engagement influences key stakeholders, including suppliers, employees, and regulatory bodies, in aligning SSCM practices with sustainability objectives (Reynolds, 2024; Siems et al., 2023). Lastly, the Triple Bottom Line (TBL) framework reinforced sustainability's financial, environmental, and social dimensions, underscoring the need for leadership-driven strategies that balance profitability with long-term ecological and societal well-being (Kumar et al., 2024; Tran et al., 2024).

**Figure 2**

*Triadic Theoretical Framework*



*Note:* Figure 2 illustrates the Triadic Theoretical Framework, depicting the integration of Transformational Leadership Theory, Stakeholder Theory, and the Triple Bottom Line framework in analyzing senior leadership engagement in SSCM implementation within MSMFs.

Key challenges MSMFs face in SSCM adoption include regulatory compliance risks, supplier misalignment, inefficient resource allocation, and financial constraints (Srivastava, 2024; Saygili et al., 2023). Prior research highlights that while senior leadership is essential for advancing sustainability initiatives, many firms struggle to convert commitments into actionable SSCM strategies (Ahmad & Karadas, 2021; Huo et al., 2021). This study builds upon existing theories and research to develop a triadic leadership framework synthesizing transformational leadership, stakeholder engagement, and sustainability principles. By integrating these three perspectives, this framework offered a new pathway for leadership-driven SSCM adoption and understanding the importance of senior leadership in MSMFs, ensuring long-term operational efficiency, regulatory compliance, and enhanced environmental performance in MSMFs.

### ***Transformation Leadership (TL) Theory***

Transformational Leadership (TL) Theory, developed by James MacGregor Burns (1978) and expanded by Bernard M. Bass and Bruce J. Avolio (1994), emphasizes the role of visionary leadership in driving organizational change (Garger et al., 2023). In the context of SSCM, TL plays a critical role in aligning sustainability initiatives with business objectives by fostering a culture of innovation, stakeholder collaboration, and long-term strategic planning (Feng et al., 2023). Senior leadership engagement is essential for the successful implementation of SSCM, particularly in MSMFs, where resource constraints and operational complexities often hinder the adoption of sustainability (Saygili et al., 2023). Transformational leaders facilitate sustainability

integration by articulating a clear vision, motivating employees, and establishing strategic sustainability goals (Ren et al., 2024). Research indicates that firms with highly engaged transformational leaders are 45% more likely to integrate sustainability initiatives into their supply chain strategies than firms with weak leadership involvement (PWC, 2024). However, while extensive research has examined senior leadership's role in sustainability within large corporations and small firms, the application of Transformational Leadership in driving SSCM adoption in MSMFs remains underexplored, creating a critical research gap. Large corporations, typically defined as those with over 1,000 employees and substantial global market reach, often have dedicated sustainability departments and extensive resources to implement SSCM initiatives (Adams et al., 2023). In contrast, small businesses, generally with fewer than 100 employees, operate with limited supply chain complexity and focus on localized sustainability efforts (Durani et al., 2024; SBA, 2025). Mid-sized firms, commonly defined as businesses with 100 to 999 employees (US Census Bureau, 2023) or annual revenues between \$10 million and \$1 billion (NCMM, 2023), often lack the financial and regulatory infrastructure of large corporations while navigating more complex supply chain networks than small businesses. These firms face unique challenges in SSCM implementation, including resource constraints, regulatory pressures, and fragmented supply chain structures, which may require distinct leadership approaches (Alayon et al., 2022; Durani et al., 2024).

Transformational leaders play a critical role in embedding sustainability within supply chain operations by fostering a proactive organizational mindset that prioritizes long-term environmental, social, and economic objectives (Waqas et al., 2023). In large corporations, extensive research has demonstrated that transformational leadership can drive SSCM adoption by reducing internal resistance, fostering stakeholder collaboration, and integrating sustainability

into corporate strategy (Abbas, 2024). However, these dynamics remain underexplored within MSMFs, where leadership inertia, resource limitations, and fragmented supply chain structures pose unique challenges to sustainability integration (Feng et al., 2023). While prior studies have examined how transformational leadership supports sustainability transitions in well-resourced organizations, there was limited empirical research on how MSMFs can operationalize transformational leadership principles to overcome SSCM implementation barriers (Saygili et al., 2023).

This study extended existing research by investigating how transformational leadership specifically addresses the unique constraints of MSMFs, including financial pressures, regulatory compliance difficulties, and limited access to sustainability expertise. Unlike large corporations, where transformational leadership has been widely linked to well-established sustainability programs, MSMFs often struggle to implement such strategies due to smaller leadership teams, lower investment capacities, and supplier misalignment with SSCM objectives (Abbas, 2024). By examining how transformational leadership can facilitate SSCM adoption in MSMFs, this study provides empirical insights into leadership-driven strategies tailored for MSMFs, filling a crucial gap in sustainability and leadership research. Through this lens, the study validated existing transformational leadership principles in the context of SSCM and also explores practical leadership interventions that MSMFs can leverage to enhance sustainability performance, improve supply chain coordination, and navigate industry-specific challenges (Leana & Cuevas, 2024; Waqas et al., 2023).

### ***Stakeholder Theory (ST)***

Stakeholder Theory (ST), first introduced by Robert Edward Freeman (1984), provided a foundational framework for understanding how businesses interact with various internal and external stakeholders to achieve long-term sustainability (Cha & Park, 2023). In the context of SSCM, senior leadership engagement is critical to aligning sustainability initiatives with the interests of key stakeholders, including suppliers, employees, regulators, customers, and investors (Fritz & Ruel, 2024). While prior research has extensively examined stakeholder engagement in large corporations with established sustainability frameworks and, to a lesser extent, in small firms with limited supply chain complexity, how MSMFs facing financial constraints, weaker supplier influence, and fragmented regulatory adherence can effectively implement stakeholder-driven SSCM remains underexplored (Saygili et al., 2023; Srivastava, 2024).

Regulatory bodies and industry watchdogs play a crucial role in enforcing sustainability standards and ensuring compliance with environmental and ethical regulations (Gao & Chen, 2024). However, firms lacking structured stakeholder engagement models often struggle to adapt to evolving compliance requirements, resulting in increased regulatory risks, penalties, and diminished competitive advantage (Global Sustainability Report, 2024). While research demonstrates that firms with proactive stakeholder collaboration experience a 30% improvement in regulatory compliance and supply chain efficiency, this relationship has primarily been documented in large corporations with dedicated sustainability teams rather than MSMFs (Feng et al., 2023; Xin et al., 2024).

One of the key barriers to stakeholder-driven SSCM adoption in MSMFs was the lack of understanding of leadership commitment to fostering transparent communication and long-term partnerships, which weakens sustainability efforts and creates misalignment between supply

chain actors (Siems et al., 2022). Research shows that firms that actively engage with suppliers, employees, and policymakers on sustainability initiatives are twice as likely to achieve long-term SSCM integration than those that adopt a reactive approach (Yang et al., 2024). However, in MSMFs where supply chain structures are fragmented, and leadership resources are constrained, the mechanisms through which senior leadership can drive effective stakeholder collaboration remain underexplored.

Existing research on stakeholder theory has primarily focused on how large corporations leverage stakeholder engagement strategies to enhance SSCM performance, while small organizations often approach sustainability from a localized, compliance-driven perspective (Siems et al., 2023; Menke et al., 2021). While previous studies have demonstrated that effective leadership fosters supplier coordination and ensures the consistent implementation of sustainability practices, these findings have not been systematically examined within MSMFs (Reynolds, 2024). The distinct challenges MSMFs face such as limited supplier bargaining power, financial constraints, and fragmented regulatory compliance necessitate a more nuanced understanding of how stakeholder-driven leadership strategies can be effectively applied in these firms (Hunt et al., 2021).

Despite these financial and operational constraints, MSMFs benefit from leadership approaches prioritizing supplier engagement, cross-sector collaboration, and adaptive sustainability strategies (Siems et al., 2023; Hunt et al., 2021). However, limited empirical research has explored how MSMF leaders can tailor stakeholder-driven SSCM practices to fit their organizational context (Nonet et al., 2022). This study bridged this gap by examining practical leadership interventions that improve stakeholder engagement, enhance supplier

coordination, and drive sustainability integration within MSMFs, providing a novel contribution to both leadership and supply chain sustainability research.

### ***Triple Bottom Line (TBL) Theory***

Triple Bottom Line (TBL) Theory, introduced by John Elkington (1997), provides a framework for evaluating business performance beyond financial profitability by integrating economic, environmental, and social sustainability (Nogueira et al., 2023; Pereira & Martins, 2021). In the context of SSCM, TBL reinforces the need for leadership-driven sustainability strategies by emphasizing how firms must balance financial growth with corporate social responsibility (CSR) and environmental stewardship to remain competitive in evolving markets (Fritz & Ruel, 2024). While extensive research has explored how large corporations with well-established sustainability programs and small firms with localized supply chains implement TBL principles, the application of TBL-driven leadership strategies in MSMFs remains significantly underexplored (Saygili et al., 2023; Srivastava, 2024).

The lack of understanding of senior leadership engagement in MSMFs often results in regulatory non-compliance, inefficient resource allocation, and missed environmental and financial opportunities (Abraham, 2023; Srivastava, 2024). Research on large corporations indicates that integrating TBL principles into supply chain operations enhances profitability, reduces operational risks, and strengthens stakeholder relationships (Ahmad & Karadas, 2021). Similarly, small firms have been found to adopt TBL principles by focusing on cost-effective sustainability practices, such as energy efficiency and responsible sourcing, to achieve compliance and competitive advantage (Huo et al., 2021). However, MSMFs face distinct challenges, including limited financial resources, fragmented supplier networks, and a lack of

structured leadership frameworks to drive TBL adoption (Feng et al., 2023). Studies suggest that many MSMFs struggle with environmental sustainability due to weak leadership commitment, leading to excessive resource consumption, inefficient logistics strategies, and inadequate waste management systems (Huo et al., 2021).

The social dimension of TBL was equally critical, ensuring ethical labor practices, employee well-being, and supplier accountability. However, while large corporations often have well-defined policies to promote labor fairness and supply chain transparency, MSMFs frequently lack structured mechanisms for implementing such practices (Feng et al., 2023). Without senior leadership actively integrating social sustainability initiatives into supply chain strategies, MSMFs risk reputational damage, workforce disengagement, and regulatory scrutiny (Saygili et al., 2023).

Organizations that incorporate transformational leadership into sustainability efforts demonstrate notable gains in operational performance and stakeholder confidence, with studies reporting up to a 25% increase in efficiency when supply chain strategies align with TBL principles (Abbas, 2024; Xin et al., 2024). Recent research has established the role of senior leadership in integrating TBL into SSCM for large firms, showing that strong leadership fosters better supplier collaboration, enhances compliance with sustainability regulations, and minimizes financial risks (Yang et al., 2024; Tundys & Wisniewski, 2023). Furthermore, companies that proactively embed economic, environmental, and social sustainability frameworks into their supply chains outperform competitors by 30% in sustainability metrics (Nogueira et al., 2025; Zhao et al., 2024).

However, these findings are primarily drawn from large corporations and small firms, leaving MSMFs an underexplored area in sustainability research (Afrouzi & Ahmadchali, 2023; Nogueira et al., 2025; Tundys & Wisniewski, 2023). This study filled this gap by examining how MSMFs can implement TBL-driven leadership strategies despite financial constraints, operational inefficiencies, and regulatory pressures. By exploring scalable leadership frameworks tailored to MSMFs, this research will provide empirical insights into how mid-sized firms can enhance sustainability adoption, improve supply chain resilience, and create long-term business value.

### **Sustainable Leadership (SL)**

Sustainable leadership is a leadership approach that integrates long-term social, environmental, and economic sustainability into organizational operations and decision-making (Liao, 2022; Okiri et al., 2024). Unlike traditional leadership models focusing primarily on short-term profitability, sustainable leadership emphasizes responsibility, ethical governance, and long-term business resilience (Fritz & Ruel, 2024). It requires leaders to consider the broader effect of their decisions on the environment, stakeholders, and future generations while ensuring corporate success (Sajjad et al., 2023). SL fosters a culture of innovation, accountability, and resource efficiency, essential in today's rapidly evolving business environment (Saygili et al., 2023).

SL is important because it enhances organizational resilience, drives regulatory compliance, and creates value for all stakeholders (Ahsan & Khawaja, 2024). In an era where businesses are progressively held responsible for their environmental and social footprint, organizations with robust sustainability-driven leadership are more likely to achieve long-term success, gain investor confidence, and maintain customer loyalty (Srivastava, 2024). Research

indicates that firms with sustainability-focused leadership experience a 20-30% increase in operational efficiency and brand trust compared to companies with weak sustainability commitments (Xin et al., 2024). Additionally, sustainable leadership fosters corporate agility, enabling businesses to adapt to evolving sustainability regulations, mitigate risks, and leverage market opportunities (Ahmad & Karadas, 2021).

### ***Role of Sustainable Leadership (SL) in SSCM***

Within SSCM, effective leadership is fundamental in embedding sustainability across all supply chain operations (Feng et al., 2024; Reynolds, 2024). Active involvement from senior leaders is vital for advancing sustainability efforts that minimize environmental harm, enhance resource efficiency, and promote ethical sourcing practices (Huo et al., 2021). Studies indicate that organizations, where leadership prioritize SSCM strategies, experience stronger supplier partnerships, improved regulatory adherence, and increased operational visibility (Feng et al., 2023). The role of sustainable leadership in SSCM encompasses.

**Embedding Sustainability into Corporate Strategy.** To achieve long-term sustainability, leaders must embed sustainability goals into core business operations rather than treating them as secondary initiatives (Lizares et al., 2024). Companies that integrate sustainability into their corporate strategy outperform competitors by 23% in long-term financial performance and have a 67% higher chance of regulatory compliance success (Yang et al., 2024). Aligning sustainability objectives with business strategies enhances resilience, improves resource efficiency, and strengthens competitive positioning in the market (Lizarenko et al., 2021; Weber, 2023). Additionally, organizations with well-defined sustainability goals report a 35% reduction in operational risks, proactively addressing ESG concerns while minimizing regulatory penalties

(Hoepner et al., 2023; Liu & Song, 2024; Olaleye et al., 2024). Leaders play a key role in establishing sustainability policies, setting measurable goals, and embedding sustainability into corporate decision-making, ensuring that these efforts become an integral part of business growth and operational strategies (Boeske, 2023).

**Enhancing Supplier Collaboration.** SL fosters stronger supplier partnerships by promoting ethical sourcing, responsible manufacturing, and adherence to sustainability standards (Nguyen & Zuidwijk, 2022; Paul et al., 2024). Over 90% of an organization's environmental impact comes from supply chain activities, making supplier engagement a key driver of sustainability performance (Koh et al., 2023; Zhao et al., 2024). However, only 13% of companies have complete visibility into their supply chains, leading to significant gaps in sustainability enforcement (Butt et al., 2024). Leaders prioritizing sustainability work closely with suppliers to improve compliance with labor rights, environmental regulations, and fair-trade practices (Esan et al., 2024; Eyo-Udo et al., 2024). Research shows that companies with proactive supplier engagement strategies reduce supply chain emissions by 22% and improve overall supply chain efficiency by 30% (Lei, 2024; Smith et al., 2023; WEF, 2021). Transparent communication, shared sustainability commitments, and incentive-driven supplier programs contribute to more responsible and efficient supply chains, reducing waste, lowering carbon footprints, and ensuring sustainable business operations (Brun et al., 2020; Duan et al., 2021; Oyetoro, 2024).

**Driving Innovation for Sustainability.** Organizations led by sustainability-focused leaders invest in innovative solutions such as green technologies, circular economy models, and energy-efficient processes to drive long-term sustainability (Saygili et al., 2023). Studies indicate that 70% of consumers are willing to pay up to 9.4% more for sustainable products, emphasizing

the competitive advantage of sustainability-driven innovation (Frey et al., 2023; Li & Kallas, 2021). Companies that invest in eco-friendly waste-reduction strategies, production techniques, and renewable energy sources, report an 18% reduction in energy costs and a 26% improvement in resource efficiency (Atlin, 2024; Majid et al., 2023). Additionally, firms that prioritize sustainability-driven innovation are twice as likely to achieve long-term profitability as they adapt to evolving industry standards, reduce carbon emissions, and optimize supply chain performance (Cervino & Mendi, 2024; Pizzurno & Cammarano, 2024). By integrating technological advancements, businesses can enhance operational efficiency, lower costs, and strengthen their market position in an increasingly sustainability-driven global economy (Cek & Ercantan, 2023).

**Ensuring Compliance and Risk Mitigation.** Proactive leadership is essential for ensuring compliance with global sustainability frameworks, such as the UNSDG and TBL principles (Srivastava, 2024). Studies show that 69% of executives believe sustainability should be a higher priority, yet only 35% have clear strategies for meeting compliance requirements, leading to increased regulatory risks (Butler, 2024; Rafi, 2022). Organizations that proactively engage in sustainability initiatives reduce legal and financial risks by up to 40%, as they align their supply chain operations with regulatory requirements and industry best practices (Sun et al., 2024; Wahyuni et al., 2024). Implementing risk management strategies such as sustainability audits, ethical sourcing policies, and climate risk assessments helps organizations mitigate liabilities and improve long-term stability (Pramukti, 2024). Research indicates that companies that embed sustainability into risk management processes experience a 32% improvement in investor confidence and reduce reputational damage by 28% (Eliza 2024; Nicolas et al., 2023). By fostering a culture of compliance and accountability, sustainable leaders protect their

organizations from regulatory penalties, operational disruptions, and reputational risks, while strengthening stakeholder trust and long-term business viability (Nobanee et al., 2021).

### ***Key Characteristics of Sustainable Leadership (SL)***

The fundamental traits shown in Figure 3 of sustainable leadership revolve around strategic foresight, ethical accountability, stakeholder collaboration, and continuous improvement, which are essential for achieving lasting organizational and societal progress.

**Long-Term Vision and Strategic Thinking.** Sustainable leaders emphasize long-term success over short-term profits by integrating sustainability goals into corporate strategy (Liao, 2022). They focus on future-oriented decision-making, ensuring business practices align with global sustainability frameworks, such as the UNSDG and the TBL (Yang et al., 2024). Organizations led by such leaders are more likely to achieve regulatory compliance, stakeholder trust, and operational stability over time (Sajjad et al., 2023; Jayashree et al., 2022).

**Ethical and Values-Based Leadership.** Integrity and ethical decision-making are core principles of SL (Shiundu, 2024). Leaders committed to sustainability prioritize corporate social responsibility (CSR), fair labor practices, and transparent governance (Fritz & Ruel, 2024). By fostering an ethical corporate culture, they ensure that employees, suppliers, and partners uphold sustainability commitments, reducing risks associated with non-compliance and reputational damage (Ali et al., 2023; Bayo & Ebikebena, 2021; Sajjad et al., 2023).

**Stakeholder-Centric Approach.** Sustainable leaders recognize that business success depends on effectively engaging multiple stakeholders, including employees, suppliers, customers, regulators, and communities (Huo et al., 2021). Rather than focusing solely on shareholders, they adopt a stakeholder-inclusive model, ensuring that supply chain partners are

aligned with sustainability goals and that employees are motivated to support sustainability initiatives (Feng et al., 2023).

**Figure 3**

*Characteristics of Sustainable Leadership*



*Note:* Figure 3 shows that Sustainable Leadership integrates accountability, transparency, and ethical decision-making to foster long-term organizational success. It emphasizes a strong organizational culture, employee empowerment, and resilience in crisis management.

Adaptability and innovation drive continuous improvement, while a stakeholder-centric approach

ensures inclusivity and responsibility. Strategic thinking and a long-term vision enable leaders to navigate challenges and create lasting positive impacts on businesses, communities, and society.

**Innovation and Adaptability.** Sustainability-focused leaders forward a culture of continuous innovation by investing in green technologies, renewable energy, and circular economy models (Saygili et al., 2023). They encourage businesses to adapt to evolving environmental regulations and market trends, ensuring that companies remain competitive in a sustainability-driven economy (Ahsan & Khawaja, 2024). Research indicates that firms prioritizing sustainability-driven innovation experience an 18% reduction in energy costs and a 26% improvement in resource efficiency (Majid et al., 2023; Saygili et al., 2023).

**Resilience and Crisis Management.** Sustainable leaders anticipate and mitigate risks associated with supply chain disruptions, climate change, and regulatory compliance (Yun & Ulku, 2023). They implement proactive risk management strategies, such as sustainability audits, ethical sourcing policies, and climate risk assessments, which reduce financial and legal liabilities by up to 40% (Srivastava, 2024). Their ability to navigate uncertainty while maintaining sustainable business operations ensures long-term stability (Liao, 2022).

**Employee Empowerment and Organizational Culture.** Sustainable leadership fosters an inclusive and purpose-driven organizational culture where employees are encouraged to contribute to sustainability goals (Atiku et al., 2024; Solomon & Kota, 2024). Leaders prioritize employee well-being, diversity, and sustainability training, increasing workforce engagement and productivity (Gbettor et al., 2024). Studies show that organizations with sustainability-focused leadership see a 32% improvement in employee retention and morale (Eliza 2024; Nicolas et al., 2023; Xin et al., 2024).

**Commitment to Transparency and Accountability.** A defining characteristic of sustainable leadership is openness in decision-making and accountability for sustainability performance (Raghvendra, 2024; Sajjad et al., 2023). Leaders track, measure, and report sustainability metrics, ensuring that progress is transparent to stakeholders, investors, and regulatory bodies (Tang & Higgins, 2022). Companies that embed sustainability into corporate reporting improve investor confidence by 32% and reduce reputational risks by 28% (Eliza 2024; Nicolas et al., 2023).

### ***Challenges in Implementing Sustainable Leadership***

SL is essential for long-term organizational growth but comes with significant challenges. Businesses must address conflicting stakeholder demands, establish measurable sustainability goals, and foster a culture that embraces change (Benvenuto et al., 2023; Demartini et al., 2024). Without strategic planning and leadership commitment, sustainability efforts may struggle to gain traction (Nahak & Ellitan, 2022).

**Competing Stakeholder Interests.** One of the significant challenges in implementing SL is balancing the diverse interests of stakeholders (Liao, 2022). Investors often prioritize financial returns, while employees, customers, and communities may focus on environmental and social responsibility (Adebayo et al., 2024). Navigating these conflicting priorities requires strong leadership (Janaswamy et al., 2024), transparent communication (Zada et al., 2023), and a strategic approach (Zabukovsek et al., 2023) to align sustainability with business objectives.

**Lack of Clear Sustainability Metrics and Accountability.** Measuring sustainability efforts is challenging due to the absence of standardized metrics and accountability frameworks (Yadev et al., 2024). Many organizations struggle to track their ESG impact, making it difficult

to assess progress and ensure responsibility (Chopra et al., 2023). Establishing clear sustainability benchmarks and integrating them into business performance evaluations can help drive meaningful change (Liu et al., 2024).

**Limited Awareness and Training.** Many organizations face a knowledge gap in SL, as leaders and employees may lack the expertise to implement sustainability initiatives effectively (Tian & Wang, 2023). Companies struggle to integrate sustainable practices into their operations without proper training and awareness programs (Sult et al., 2023). Investing in leadership development, employee training, and sustainability education is crucial to bridging this gap (Barakat et al., 2023).

**Resistance to Change.** Change resistance is a significant barrier to SL, as employees and stakeholders often prefer traditional business models that prioritize short-term efficiency (Rehman et al., 2021). Overcoming this resistance requires effective clear communication of sustainability benefits, change management, and fostering a culture of adaptability (Musaigwa, 2022). Encouraging innovation and stakeholder involvement can also ease the transition to sustainable practices (Hollebeek et al., 2022).

**Short-Term Profit Pressure.** A focus on immediate financial gains often discourages businesses from prioritizing sustainability (Haessler, 2020). Short-term profit expectations can lead to decisions that compromise long-term environmental and social responsibility (Rahi et al., 2023). To address this, leaders must advocate for a long-term vision where sustainability and profitability coexist, demonstrating how responsible practices contribute to financial resilience and competitive advantage (Ji et al., 2023).

### **Sustainable Supply Chain Management (SSCM)**

SSCM is a strategic approach that integrates environmental, social, and ethical considerations into the entire supply chain process (Esan et al., 2024). It promotes social responsibility, minimizes environmental impact, and ensures economic sustainability while maintaining efficiency and profitability (Eyo-Udo et al., 2024). SSCM involves responsible sourcing of raw materials, reducing carbon footprints, optimizing energy use, and ensuring fair labor practices (Ishaya et al., 2024). Organizations adopt sustainable practices to enhance resilience, reduce operational risks, and align with global sustainability goals (Zhang & Mohammad, 2024). A well-managed, sustainable supply chain improves brand reputation and contributes to long-term business success by balancing profitability with environmental and social responsibility (Shebeshe & Sharma, 2024).

### ***Importance and Role of Sustainability in SCM***

SSCM is critical in advancing global sustainability efforts by ensuring businesses operate responsibly across their entire value chain (Shekarian et al., 2022). It helps reduce environmental impact by minimizing waste, optimizing resource usage, and lowering carbon emissions (Alves et al., 2022). According to the Carbon Disclosure Project (CDP), supply chains contribute 90% of a company's carbon emissions and 50% to 70% of operating costs, making sustainability a crucial business imperative (CDP, 2024; WEF, 2021). Ethical labor practices and fair-trade principles within supply chains promote social equity and improve working conditions, fostering a more inclusive economy (Khatun, 2024). The International Labor Organization (ILO) estimates that 25 million people are in forced labor conditions worldwide, highlighting the need for ethical sourcing and labor rights protection (ILO, 2022). Companies with strong sustainability policies have seen a 35% increase in employee retention and engagement, demonstrating the positive

impact of responsible supply chain practices (Paszowska & Vallejo, 2023; Syafri & Rasyid, 2023).

Economically, SSCM enhances operational efficiency, reduces risks, and drives long-term profitability by integrating sustainability into procurement, production, and distribution processes (Chen et al., 2024). A report by McKinsey & Company suggests that companies adopting sustainable supply chains can reduce costs by up to 16% and improve brand reputation, attracting sustainability-conscious consumers (Doherty et al., 2023; Vorecol, 2024). Additionally, businesses with sustainable supply chains have outperformed competitors by 13% in stock market returns over the past five years (Doherty et al., 2023). Organizations adopting SSCM contribute to the United Nations' SDGs, ensuring a balance between economic growth, environmental stewardship, and social responsibility (Mcgrath, 2024). SSCM strengthens corporate resilience and promotes a sustainable future for industries and communities worldwide (Henrich et al., 2022).

### ***Current Trends in SSCM***

SSCM is evolving with key trends that enhance environmental, social, and economic responsibility (Hong & Xiao, 2024). Businesses are integrating circular economy principles, focusing on recycling and waste reduction, while digitalization and AI improve efficiency and transparency (Karim et al., 2024). Green logistics and low-carbon transportation solutions, including electric vehicles and optimized route planning, are becoming standard (Eggert & Hartmann, 2022). Companies also strengthen ethical sourcing and fair-trade practices for responsible supplier management (Karim et al., 2024). With growing concerns over supply chain disruptions, organizations are enhancing resilience and risk management by diversifying

suppliers and leveraging predictive analytics (Stutz et al., 2023). Stricter ESG reporting and compliance requirements drive businesses to adopt standardized sustainability disclosures (Eggert & Hartmann, 2022). Additionally, consumer-driven sustainability pushes brands to prioritize eco-friendly products and responsible marketing (Alkaraan et al., 2023).

### ***Components of SSCM***

SSCM is built on several key components, illustrated in Figure 4, that ensure businesses operate responsibly while balancing economic, environmental, and social considerations.

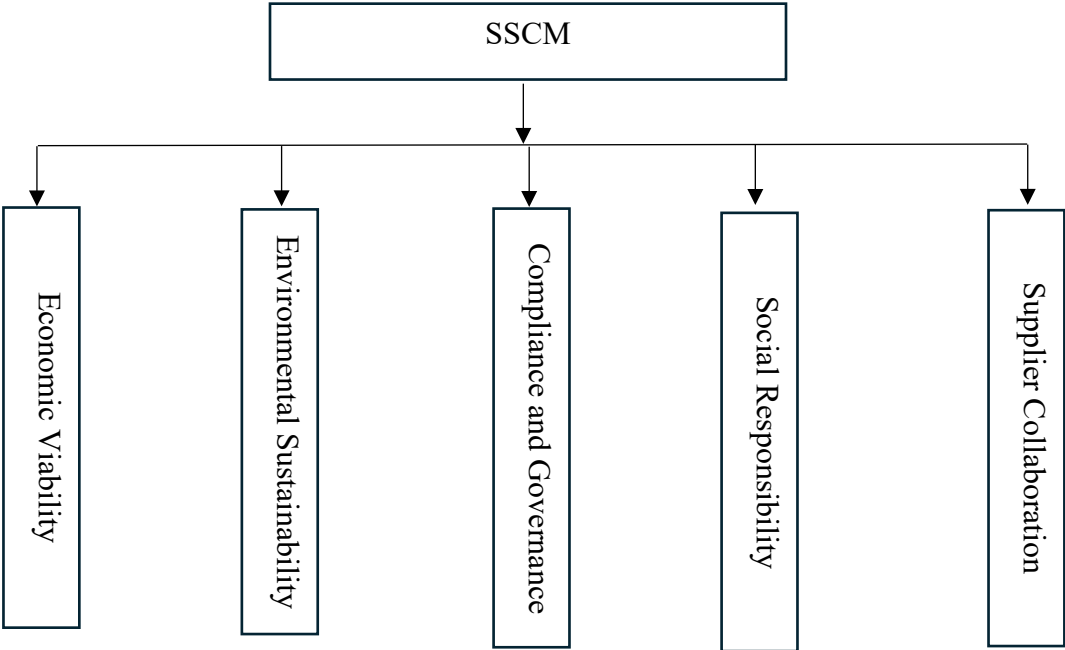
**Economic Viability.** A sustainable supply chain must ensure financial stability while integrating sustainability into operations (Chen et al., 2024). Companies focus on optimizing logistics, reducing waste, and leveraging technology to improve efficiency and cut costs (Zhao et al., 2023). Investments in renewable energy, automation, and resource optimization contribute to long-term profitability (Edunjobi, 2024). By implementing cost-effective, sustainable strategies, businesses can maintain competitiveness in the market (Hassan et al., 2024). A well-structured SSCM ensures financial resilience while addressing sustainability challenges (Chen et al., 2024).

**Environmental Sustainability.** Reducing environmental impact is a critical component of SSCM. Businesses adopt eco-friendly practices such as carbon footprint reduction, waste management, and responsible sourcing of materials (Nazir et al., 2024). Many companies are shifting to renewable energy and biodegradable packaging to minimize pollution (Versino et al., 2023). Water conservation, energy efficiency, and green logistics are crucial in reducing supply chain emissions (Nazir et al., 2024). Implementing sustainable practices helps companies comply with global climate agreements and sustainability goals (Jatoliya et al., 2024).

**Regulatory Compliance and Governance.** Organizations must adhere to national and international regulations related to sustainability and ethical supply chain management (Dilling et al., 2024). Compliance with environmental standards, labor laws, and corporate governance guidelines ensures responsible business practices (Smith et al., 2024). Regulatory frameworks such as the Paris Climate Agreement and Global Reporting Initiative (GRI) guide companies in maintaining transparency and accountability (Falkner, 2016). Non-compliance can lead to reputational damage, legal penalties, and financial losses (Orazalin et al., 2023). Strong governance structures help organizations mitigate risks and maintain ethical operations (Nguyen & Zuidwijk, 2024).

**Figure 4**

*Components of SSCM*



*Note:* Figure 4 illustrates the key components of SSCM, which ensure that businesses integrate ethical practices, operational efficiency, and corporate responsibility into their supply chain processes.

**Social Responsibility.** A sustainable supply chain ensures fair labor practices, ethical sourcing, and worker safety (Esan et al., 2024). Companies must prioritize the well-being of employees and suppliers by providing safe working conditions, fair wages, and equal opportunities (Srivastava, 2024). Avoiding exploitative practices such as child labor and forced labor is essential for ethical operations (Khatun, 2024). Organizations engaging in corporate social responsibility (CSR) initiatives strengthen their brand reputation (Srivastava, 2024). Ethical and socially responsible supply chains enhance employee morale and customer trust (Vuong & Bui, 2023).

**Supplier Collaboration.** Close collaboration with suppliers is essential for achieving sustainability goals across the supply chain (Bakalo & Bogale, 2024). Companies must establish clear sustainability expectations, conduct supplier audits, and promote responsible sourcing (Ukko et al., 2021). Transparency and accountability in supplier relationships ensure adherence to ethical and environmental standards (Javed et al., 2024). Collaborative efforts help mitigate risks, improve supply chain resilience, and foster innovation (Pereira et al., 2023). Businesses that engage suppliers in sustainability initiatives create a more responsible and future-ready supply chain (Achal & Vijaya, 2024).

### ***SSCM Framework and Strategies***

An SSCM framework refers to businesses' structured approach to integrating sustainability principles into their supply chain operations (Kumar et al., 2023). It establishes

guidelines, policies, and practices that help organizations minimize environmental impact, promote ethical sourcing, and enhance economic efficiency (Knauss, 2024). The framework ensures sustainability in procurement, production, logistics, and waste management processes (Knauss, 2024). SSCM strategies are the specific methods and approaches businesses adopt to complete sustainability goals within their supply chain (Amofa et al., 2023). These strategies include models such as the circular economy, green supply chain management (GSCM), lean and agile supply chain strategies, life cycle assessment (LCA), and sustainable procurement practices (Amofa et al., 2023). Each strategy focuses on different aspects of sustainability, such as reducing waste, lowering carbon emissions, improving resource efficiency, and ensuring ethical labor practices (Sun et al., 2022).

**Circular Economy Model.** The circular economy model shifts from the traditional linear supply chain approach of “take, make, dispose” to a closed-loop system emphasizing recycling, reusing, and repurposing materials (Mayanti & Helo, 2024). This strategy reduces waste, conserves natural resources, and lowers carbon emissions (Hsieh et al., 2024). Companies implementing circular economic principles design products for longevity, promote remanufacturing, and incorporate sustainable materials into production, ensuring minimal environmental impact (Kopman & Majava, 2024).

**Green Supply Chain Management (GSCM).** GSCM focuses on reducing the environmental footprint of supply chain operations (Nazir et al., 2024). This includes optimizing transportation to lower emissions, using eco-friendly packaging, and sourcing raw materials from sustainable suppliers (Koh et al., 2023; Nweje & Taiwo, 2025). Many businesses adopt renewable energy sources in manufacturing and logistics to further enhance their green initiatives

(Nazir et al., 2024; Rakib, 2024). GSCM benefits the environment and improves brand reputation and regulatory compliance (Koh et al., 2023).

**Lean and Agile Supply Chain Strategies.** A lean supply chain minimizes waste and maximizes efficiency by reducing excess inventory, optimizing logistics, and improving process flow (Khawka et al., 2024). This results in cost savings and increased responsiveness to market demands (Fesobi et al., 2024). Meanwhile, an agile supply chain focuses on flexibility and rapid adaptation to changing consumer trends, disruptions, or market uncertainties (Korucuk et al., 2024). When combined, lean and agile strategies create a resilient and sustainable supply chain that balances efficiency, responsiveness, and resource conservation (Sharafi & Ullah, 2023).

**Life Cycle Assessment (LCA).** LCA is a strategic approach that assesses a product's environmental influence from natural raw material extraction to disposal (Ugural et al., 2024). By analyzing factors such as energy consumption, carbon footprint, and material sustainability at each stage, businesses can identify opportunities for improvement (Miller, 2022; Zhang et al., 2024). LCA helps organizations make data-driven decisions, such as selecting eco-friendly materials or optimizing logistics routes to minimize emissions, ensuring a holistic approach to sustainability (Burchart & Przytula, 2024).

**Sustainable Procurement Practices.** Sustainable procurement ensures that businesses source raw materials, components, and services ethically and environmentally responsibly (Nygaard, 2023). This involves selecting suppliers who adhere to the use of sustainable materials, fair labor practices and comply with environmental regulations (Este et al., 2022). Companies often implement supplier audits, fair trade policies, and certifications, e.g., ISO 14001, for environmental management to strengthen their commitment to sustainability (Ojiako

et al., 2024). Sustainable procurement reduces risks, enhances brand reputation, and supports a socially responsible global supply chain (Nygaard, 2023).

### ***Challenges in Implementing SSCM***

Implementing SSCM is essential for organizations seeking to balance profitability with environmental and social responsibility (Shebeshe et al., 2024). However, transitioning to a sustainable supply chain presents significant challenges that hinder widespread adoption (Kareem et al., 2023). Cost implications remain a primary concern, as businesses must invest in eco-friendly technologies and sustainable materials while maintaining financial viability (Li, 2024). Additionally, lacking leadership commitment slows progress, as many executives prioritize short-term financial goals instead of long-term sustainability efforts (Rygiuk & Zabrocka, 2024). The absence of standardized sustainability metrics further complicates implementation, making it difficult to accurately measure and report sustainability performance (Ishaya et al., 2024). Resistance from suppliers and partners also poses a barrier, as some stakeholders may be reluctant to adopt new sustainable practices due to perceived costs or operational changes (Pagell & Wilhelm, 2024). Supply chain complexity in global markets makes monitoring and enforcing sustainability practices across multiple suppliers challenging (Nasseri & Singh, 2024).

**Cost Implications.** Transitioning to sustainable supply chain practices often involves significant financial investments (Li et al., 2023). For instance, sourcing sustainable materials, adopting eco-friendly technologies, and ensuring compliance with environmental regulations can increase operational costs (Destiny et al., 2024). A CDP report indicates that supply chains are

responsible for up to 90% of an organization's environmental impact and 50% to 70% of its operating costs, underscoring the financial challenges in implementing SSCM (CDP, 2022).

**Lack of Leadership Commitment.** Effective SSCM requires strong leadership commitment to drive organizational change (Reynolds, 2024). However, some companies lack this dedication, hindering the integration of sustainable practices. A study highlighted that only 25% of companies actively engage their suppliers in reducing greenhouse gas emissions, reflecting insufficient leadership focus on sustainability within supply chains (Lintukangas et al., 2022; Song et al., 2023).

**Lack of Standardized Sustainability Metrics.** The absence of universally accepted sustainability metrics poses a significant barrier to SSCM (Kumar et al., 2023). Companies struggle to accurately measure and report environmental and social impacts without standardized benchmarks (Okay et al., 2024). This inconsistency can lead to challenges in assessing performance and making informed decisions to enhance sustainability efforts (Okay et al., 2024). A report by the WEF indicates that over 70% of organizations consider data fragmentation a significant opposition in sustainability reporting, complicating efforts to gather complete data on social impacts and environmental (WEF, 2024).

**Resistance from Suppliers and Partners.** A 2023 McKinsey report found that 57% of companies face moderate to high supplier resistance when enforcing sustainability policies, mainly due to cost concerns, lack of regulatory alignment, and limited technological capabilities (Chenneveau et al., 2022). Similarly, a Harvard Business Review survey indicated that 42% of suppliers hesitate to adopt green practices because of the financial burden and fear of competitive disadvantages (Cote, 2021). Moreover, a 2022 study by the World Economic Forum revealed that

only 26% of small and mid-sized suppliers are willing to invest in sustainable sourcing practices without financial incentives (WEF, 2024b). This resistance often leads to inconsistencies in sustainability efforts across supply chains, making it difficult for organizations to achieve their ESG targets (Wissenschaft, 2023).

**Supply Chain Complexity.** The increasing intricacy of supply chains globally presents a major challenge in implementing SSCM (Iftikhar et al., 2024). Managing sustainability efforts becomes highly intricate with multinational operations, diverse regulatory requirements, and multi-tier supplier networks (Sarpong, 2023). A 2023 Deloitte report found that 68% of supply chain executives consider complexity a primary barrier to achieving sustainability goals (Kilpatrick et al., 2024). Furthermore, PWC (2024) research indicated that only 30% of companies have complete visibility beyond their Tier 1 suppliers, making it challenging to track environmental and ethical compliance across the entire value chain. Additionally, a WEF (2024) study highlighted that 55% of companies struggle with integrating sustainability data across fragmented supply chains, leading to inefficiencies in reporting and decision-making.

### **Role of Senior Leadership in SSCM**

Senior leadership is pivotal in successfully implementing SSCM by driving innovation, establishing performance metrics, shaping policies, fostering stakeholder engagement, and ensuring strategic alignment with sustainability objectives (Reynolds, 2024). Leadership commitment is essential in overcoming financial, operational, and regulatory barriers that hinder the transition to sustainable supply chain practices (Agbenyegah & Kumaday, 2024). A McKinsey (2023) study found that companies with strong executive leadership in sustainability

initiatives experience a 35% increase in supply chain efficiency and a 22% reduction in carbon emissions compared to organizations with weak leadership involvement.

### ***Investment in Innovation and Technology***

Senior leaders are critical in driving technological advancements to enhance sustainability in supply chain operations (Angelo & Belvedere, 2023). Investing in green technologies, digital supply chain platforms, and circular economy models allows firms to reduce waste, optimize resource utilization, and improve energy efficiency (Fernandes et al., 2024; Saygili et al., 2023). A PWC (2024) report indicated that companies that invest in sustainable innovation achieve up to 26% higher resource efficiency and an 18% reduction in operational costs. Furthermore, automation, blockchain, and AI-powered analytics improve traceability and compliance monitoring, enabling firms to align with global sustainability standards (Angelo & Belvedere, 2023). Leaders prioritizing technological investments ensure that their organizations remain competitive in an increasingly sustainability-driven global market (Fernandes et al., 2024).

### ***Performance Metrics and Accountability***

Effective leadership in SSCM requires clear performance measurement frameworks to track sustainability outcomes (Saunila et al., 2024). Without well-defined sustainability key performance indicators (KPIs), organizations struggle to assess progress and identify areas for improvement (Damtoft et al., 2024). According to the WEF (2024), 70% of companies cite data fragmentation as a significant barrier to sustainability performance tracking, making standardized reporting critical. Senior leaders must establish accountability systems, integrate ESG metrics into performance evaluations, and enforce sustainability reporting standards to

drive measurable progress (Saunila et al., 2024). Research shows that companies implementing comprehensive sustainability performance metrics achieve 32% higher investor confidence and a 28% reduction in reputational risks (Buertey et al., 2025; Srivastava, 2024).

### ***Policy Development***

Senior leadership is instrumental in establishing corporate sustainability policies that align with regulatory frameworks and industry best practices (Renolds, 2024). Policies related to ethical sourcing, carbon neutrality, circular economy adoption, and supplier compliance guide decision-making across the supply chain (Sarpong et al., 2023). A Deloitte (2024) study revealed that organizations with well-defined sustainability policies are 40% more likely to achieve compliance with environmental regulations (Brennan et al., 2024). Clear corporate sustainability policies also enhance supply chain transparency and reduce legal liabilities, positioning firms as leaders in sustainable business practices (Leite et al., 2024). Leadership-driven policy frameworks ensure that sustainability initiatives are not just corporate statements but integrated into daily operations (Renolds, 2024).

### ***Stakeholder Engagement***

Senior leadership fosters collaboration among supply chain stakeholders, including suppliers, employees, investors, regulatory bodies, and customers (Cooper, 2024). Sustainable supply chains require collective efforts from all stakeholders, making leadership-driven communication, training, and incentive programs essential (Esan et al., 2024). According to a PWC (2024), 48% of companies face moderate to high supplier resistance when enforcing sustainability policies, primarily due to cost concerns and lack of regulatory alignment. Strong leadership can bridge these gaps by establishing sustainability incentives, supplier training

programs, and cross-sector partnerships, ensuring better alignment between business goals and sustainability expectations (Altman & Fry, 2024; Sadri et al., 2024).

### ***Strategic Alignment***

A core leadership responsibility is aligning sustainability goals with overall business strategy and supply chain operations (Alkhodary, 2023). Companies that integrate sustainability into their corporate vision and supply chain decision-making frameworks achieve higher long-term success (Beretta et al., 2024). A McKinsey (2023) report found that organizations with strong sustainability integration strategies see 23% higher long-term financial performance and a 67% higher success rate in regulatory compliance. Senior leaders ensure sustainability becomes a core business function rather than an isolated initiative, driving consistent and scalable sustainability improvements (Singh & Mathiyazhagan, 2024).

### **Summary**

The literature establishes that senior leadership engagement is essential for embedding sustainability principles within supply chain operations (Asuah et al., 2024; Jum'a et al., 2022). While strong leadership is linked to improved supply chain efficiency, compliance, and trust (Saygili et al., 2023), mid-sized manufacturing firms (MSMFs) continue to face leadership inertia, resource constraints, and operational fragmentation that hinder SSCM adoption (Ahmad & Karadas, 2021; Feng et al., 2023). Studies reveal that only 35% of MSMFs integrate leadership-driven sustainability strategies, leaving significant room for improvement in policy development, supplier alignment, and performance tracking (PWC, 2024; Sachs et al., 2024).

To address this gap, the study adopted a Triadic Theoretical Framework integrating Transformational Leadership (Bass & Avolio, 1994), Stakeholder Theory (Freeman, 1984), and

the Triple Bottom Line (Elkington, 1997). These frameworks helped evaluate how visionary leadership, stakeholder engagement, and sustainability principles intersect in the MSMF context, where existing research has primarily focused on large corporations or small businesses (Srivastava, 2024; Kumar et al., 2024). This study uniquely positioned itself by focusing on how MSMFs can operationalize these leadership models despite financial and structural limitations. While this chapter is built on theoretical and empirical insights, the next chapter defines the research methodology employed to investigate the role of senior leadership in advancing SSCM within MSMFs.

### Chapter 3: Research Methodology

The problem addressed in this study was understanding the impact of the lack of senior leadership engagement in implementing Sustainable Supply Chain Management (SSCM) practices within mid-sized manufacturing firms (MSMFs) in the United States. This lack of involvement hinders progress in meeting sustainability goals, increases regulatory compliance risks, and results in missed opportunities for operational and environmental advancements (Jawad, 2024; Reynolds, 2024). While senior leadership is crucial for driving SSCM, many organizations struggle to translate leadership commitments into actionable strategies aligned with global sustainability frameworks, such as the UNSDGs (Renolds, 2024; Srivastava et al., 2024).

The purpose of this qualitative multiple-case study was to examine how senior leadership in MSMFs in the United States overcomes challenges associated with adopting SSCM practices and implements strategies to enhance sustainability initiatives. The research focused on identifying the approaches leaders use to address barriers such as limited resources, fragmented supply chain relationships, and stakeholder alignment, which often impede the adoption of SSCM (Adelusola, 2024; Siems et al., 2022). Furthermore, it was aimed to explore the factors that enable senior leaders to convert sustainability commitments into actionable and measurable outcomes, with an emphasis on the role of leadership styles and decision-making processes. Additionally, attention was given to organizational culture elements, such as values, norms, and internal collaboration, which either support or hinder leadership engagement in SSCM practices (Sajjad et al., 2020), offering a comprehensive understanding of the internal dynamics that influence sustainability initiatives (Osei et al., 2023).

This chapter provides the rationale for employing a qualitative multiple-case study design and how this methodological approach supports the study's objectives. Key components include a description of the target population and sampling strategy, data collection instruments and procedures, operational definitions, and the data analysis plan. The structure also addresses foundational assumptions, limitations, delimitations, and ethical considerations that ensure methodological integrity.

### **Research Methodology and Design (Nature of the Study)**

This study employed a qualitative methodology with a multiple-case study design to explore how senior leadership in MSMFs in the United States engages with and implements SSCM practices. The multiple-case study approach, as defined by Tobita (2025) and Annamalah (2024), involves the empirical investigation of a contemporary phenomenon within its real-world context, especially when the boundaries between the phenomenon and context are not clearly evident (Boutin, 2025; You, 2025). This method enables the researcher to examine multiple bounded systems, such as individual firms, through in-depth data collection involving multiple sources of information (Adams et al., 2022; Kass, 2024), including interviews, documents, and organizational reports (Crosby, 2024; Sarpong et al., 2023). Originating from the foundational work of Robert K. Yin (1994), Robert E. Stake (1995/2006), and Sharan B. Merriam (1998), the multiple-case study design has been widely used to analyze complex organizational behaviors and contextual factors across various sectors (Adams et al., 2022).

In past research, the multiple-case study method has proven effective in exploring leadership strategies within sustainability and supply chain contexts (Reynolds, 2024). For example, Olowo (2023) utilized this approach to understand leadership strategies for supply

chain managers in adopting innovative technology. Christopher M Durugbo and Zainab Al Balushi (2024) use multiple case studies to analyze four European supply chain crises. Atif Saleem Butt (2025) uses multiple case study to examine the benefits of cooperative competition among suppliers in the construction industry, The design also enables triangulation through multiple data sources, thereby increasing the trustworthiness of the findings and providing deeper insights into leadership actions and the cultural factors influencing SSCM implementation (Neske et al., 2024; Loughlin et al., 2023).

The multiple case study approach was particularly well-suited for this research, as it seeks to understand what leadership strategies were employed and how and why they succeed or fail in different organizational contexts. The qualitative nature of the study allows for a detailed exploration of leadership behaviors, organizational culture, and stakeholder dynamics, elements critical to SSCM adoption that are difficult to quantify through statistical means (Oranga & Matere, 2023). The study identified cross-case patterns and variations by analyzing multiple cases, strengthening the transferability of findings and providing a more comprehensive understanding of leadership engagement in sustainability across MSMFs (Allsop et al., 2022).

Alternative methodologies and designs were considered but were found to be less suitable for the study's goals. This first consideration was a quantitative approach method that involves collecting and analyzing numerical data to identify patterns, test hypotheses, and make generalizations about a population using statistical techniques (Ghanad, 2023). The quantitative approach was ruled out because the study does not aim to test hypotheses or measure predefined variables statistically, but to explore leadership practices and perceptions through open-ended inquiry.

A single-case study design, which involves a detailed analysis of one bounded system within its real-life context (Coombs, 2022), was considered for this research. While it allows for deep contextual understanding, it limits the scope of analysis to a single organization (Daniels et al., 2024). This constraint reduces the potential to identify patterns across different firms (Adams et al., 2022). As a result, it restricts the ability to draw broader, transferable insights. Therefore, it was deemed less suitable for addressing the study's objectives.

Phenomenological research was another alternative, which focuses on understanding individuals' lived experiences and the meanings they ascribe to those experiences (McLeod, 2024). While phenomenological methods can be integrated into multiple-case study designs and are valuable for deeply capturing personal experiences, they are generally more appropriate when the core objective is to understand subjective, emotional, or psychological responses to a particular phenomenon (Hagerup et al., 2025; Whewell, 2024). In contrast, this research explored strategic, organizational, and leadership-level practices across multiple firms, focusing on experiences and the structural and cultural mechanisms that influence SSCM implementation. Therefore, although a phenomenological multiple-case design could technically be used, the chosen qualitative multiple-case study design, grounded in organizational and leadership inquiry, is more appropriate for aligning with the study's problem, purpose, and research questions, particularly regarding sustainability strategy and decision-making.

### **Population and Sample**

The targeted population for this study consisted of senior leaders within MSMFs in the United States. These firms typically employ between 100 and 999 individuals and generate annual revenues ranging from \$10 million to \$1 billion. Senior leaders, including CEOs, COOs,

supply chain directors, and other executive-level personnel, were appropriate for this study because they were directly responsible for strategic decision-making, organizational culture, and the implementation of SSCM initiatives (Agbenyegah & Kumadey, 2024). This study focused on understanding the lack of leadership engagement in sustainability practices, and this population was well-suited to address the research problem, purpose, and questions.

A purposive sample of approximately 17 senior leaders was selected for participation in this qualitative multiple-case study. Purposive sampling, also known as purposeful sampling, is a type of non-probability sampling technique commonly used in qualitative research (Stratton, 2024). In this research, participants were intentionally selected because they possess specific characteristics, experiences, or knowledge that are directly relevant to the research questions and objectives (Ahmad & Wilkins, 2024; Stratton, 2024). This sampling strategy was particularly suitable when the goal was to gain in-depth insights from individuals who are especially knowledgeable about the phenomenon under study (Ahmad & Wilkins, 2024).

The proposed sample size of 17 senior leaders was adequate to achieve data saturation, the point at which no new information or themes emerge from the data, thus ensuring the credibility and depth of the findings (Ahmed, 2025; Rahimi & Khatooni, 2024). Purposeful selection ensured that all participants met specific inclusion criteria, namely, held a senior leadership role and had direct involvement in sustainable supply chain management (SSCM) implementation (Rahimi & Khatooni, 2024). The inclusion criteria for participants were:

- a. Serving in senior leadership roles such as CEO, COO, or Supply Chain Director within MSMFs.
- b. A minimum of two years of direct involvement in SSCM implementation.

- c. Active participation in sustainability-related decision-making within their organization.
- d. Willingness and availability to participate in a 45-minute or longer virtual interview session via Microsoft Teams or Zoom.

Purposeful sampling was appropriate for this dissertation's qualitative multiple-case study design (Bouncken et al., 2025) because it allows for the intentional selection of information-rich participants who are directly involved in SSCM decision-making (Herchline, 2024). This method aligns with the study's objective to explore in-depth perspectives of senior leaders within real-world contexts. By targeting individuals with relevant experience and expertise, purposeful sampling supported the generation of meaningful insights that address the research questions and enhance the depth and credibility of the findings (Bouncken et al., 2025; Stratton, 2024).

Participants were recruited through multiple channels to ensure diversity and relevance in the sample. These channels include professional networks such as the Council of Supply Chain Management Professionals (CSCMP), Institute for Supply Management (ISM), and the Association for Supply Chain Management (ASCM), as well as sustainability-focused industry associations like the Sustainable Purchasing Leadership Council (SPLC) and the U.S. Green Building Council (USGBC). In addition, outreach was conducted via LinkedIn and through direct email invitations to firms recognized for their sustainability initiatives (Lang et al., 2023; Negrin et al., 2022). A snowball sampling strategy was also employed, inviting initial participants to refer to other qualified senior leaders from their professional circles (Leighton et al., 2021). Snowball sampling involves identifying new participants through recommendations

made by those already enrolled in the study, allowing the sample to grow organically through professional or social connections (Heeler, 2024). This multi-channel recruitment approach increased the likelihood of identifying a diverse and qualified sample while ensuring representation across industry sectors and SSCM maturity levels (Carter et al., 2023; Negrin, 2022).

### **Instrumentation**

This study's primary data collection instrument was a semi-structured interview protocol designed to guide one-on-one interviews with senior leaders in MSMFs across the United States. This protocol, included in Appendix C, consists of open-ended questions developed to elicit rich, in-depth responses related to participants' experiences with SSCM, leadership strategies, and organizational culture. The semi-structured format provided both structure and flexibility, allowing the interviewer to explore topics in greater depth based on participant responses while maintaining consistency across interviews (Buys et al., 2022; Kakilla, 2021; Ruslin et al., 2022). This approach supported the study's exploratory nature and allowed for emergent insights that may not arise through more rigid interview structures.

The interview protocol was developed based on constructs drawn from the literature on transformational leadership, stakeholder theory, and the triple bottom line (TBL) framework, ensuring strong alignment with the study's theoretical foundation. A pilot test was conducted with one individual who met the study's inclusion criteria but was not included in the final data analysis. The purpose of the pilot was to assess the clarity, flow, and relevance of the semi-structured interview questions (Tate et al., 2023). Informed consent was obtained from pilot participants, and his feedback was used to confirm the quality of the protocol. No refinement was

made after the pilot test in the interview protocol. Additionally, the dissertation committee and subject matter experts in qualitative research and sustainable leadership reviewed the interview protocol to validate the content. These combined strategies contributed to the credibility and overall quality of the data collection process.

Four key strategies were employed to establish trustworthiness in this qualitative research (Ahmed, 2024). Credibility, which refers to confidence in the truth and accuracy of the findings, was enhanced through prolonged engagement during interviews, peer debriefing with academic mentors, and member checking, whereby participants were invited to review summaries of their responses for accuracy and completeness (Dado et al., 2023; Stahl & King, 2020). Transferability, defined as the extent to which the findings of the study can be applied or transferred to other settings, was supported by providing thick, detailed descriptions of the study context, participants, and findings, enabling readers to assess the applicability of results in their own contexts (NU, 2025; Younas et al., 2023). Dependability, which refers to the consistency and reliability of the research process over time, was addressed by maintaining a comprehensive audit trail and clearly documenting the research design, decisions, and procedures (Carcary, 2020; Kakkar et al., 2023). Finally, confirmability, the degree to which the findings are shaped by the participants' responses rather than researcher bias or interest, was ensured by employing NVivo software for systematic coding and thematic analysis, as well as maintaining reflexive notes and transparent data handling procedures (Ahmed, 2024; Allsop et al., 2022).

Since the researcher developed the interview protocol specifically for this study, no copyright permissions were required for its use. However, approval from the Institutional Review Board (IRB) was obtained, as outlined in Appendix I, before data collection to ensure the

protection of human subjects and adherence to ethical research standards. Informed consent was also secured from all participants on an external hard drive with a password-protected folder before conducting interviews, granting permission to collect, record, and analyze their responses for research purposes. A finalized copy of the interview questions is included in Appendix C for reference.

## **Study Procedure**

The step-by-step recruiting and data collection procedures for this study was as follows:

1. **Ensure Data Security and Ethical Compliance:** A secure data management system was established before recruitment. All study-related materials, including contact information, consent forms, interview recordings, transcripts, and participant notes, were stored on an external hard drive in an encrypted, password-protected folder accessible only to the researcher (see Appendix C). Personally identifiable information was de-identified to preserve confidentiality. Under IRB and ethical research guidelines, all data will be retained for three years and then permanently destroyed.
2. **Develop Interview Protocol:** Created a semi-structured interview protocol with open-ended questions aligned with the problem statement, purpose statement, and theoretical framework (see Appendix D).
3. **Prepare Recruitment Materials:** Drafted a recruitment email outlining the eligibility criteria, study purpose, and voluntary nature of participation (see Appendix E).
4. **Distribute Recruitment Message:** Shared the recruitment message via LinkedIn outreach (see Appendix F), direct email, and sustainability-focused professional networks, along with an attached informed consent form (see Appendix G).

5. Securely Track Participant Outreach: Used a password-protected Excel spreadsheet to track contact details, screen participants for eligibility according to inclusion criteria, and organize responses. The file was stored in the encrypted folder referenced in Step 1.
6. Obtain Informed Consent: Participants were asked to review and electronically sign the IRB-approved informed consent form before scheduling interviews. This form outlines the study's purpose, voluntary nature, risks, benefits, and data protection protocols. Only participants who submit signed consent forms was included in the study.
7. Schedule and Conduct Interviews: Confirm eligible participants and schedule one-on-one virtual interviews using a secure audio/video conferencing platform Zoom.
8. Record and Transcribe Interviews: With participants' permission, interviews were audio/video-recorded and transcribed verbatim using a confidentiality-compliant transcription service or manually by the researcher.
9. Conduct Member Checking: Each participant received a copy of their transcript to review and confirm the accuracy of their responses. Clarifications or corrections were not submitted by participants for incorporation.
10. Analyze Data: Begin thematic analysis by organizing transcripts according to participant, research, and interview questions. The data were then coded and interpreted using NVivo software to identify emerging patterns and themes.

## **Data Analysis**

This qualitative multiple-case study employed thematic analysis as the primary data analysis method. Thematic analysis is a method used in qualitative research to identify, analyze, and interpret patterns of meaning and themes within textual data (Christou, 2023). It provided a

flexible yet structured approach to examining complex narratives and uncovering insights across participant responses (Naeem et al., 2023). Thematic analysis was especially well-suited for in-depth studies exploring perceptions, experiences, and practices (Dawadi, 2020; Naeem et al., 2023; Kigar & Varpio, 2020). In this study, the interview data collected from senior leaders in MSMFs across the United States were organized, coded, and interpreted using Braun and Clarke's six-phase framework for thematic analysis (Braun & Clarke, 2023), which supported a systematic and transparent approach to meaning-making across multiple cases.

The software NVivo assisted in organizing and coding the qualitative data. NVivo is a qualitative data analysis program capable of importing, managing, and coding transcribed interview data (Allsop et al., 2022; Limna, 2023). It supported to identify themes through the continuous development and modification of codes (Elliott, 2021). This software also helped to manage large amounts of textual data efficiently, supporting open coding and thematic synthesis (Allsop et al., 2022). It enhanced the analysis process's confirmability, dependability, and trustworthiness by enabling an audit trail of all coding decisions (Bingham, 2023; Wittman & Brown, 2022).

The first step of the thematic analysis began with data familiarization (Byrne, 2022; Naeem et al., 2023; Sovacool et al., 2023). When interviews were completed and transcribed, the researcher read each transcript multiple times to fully immerse in the content. Transcripts were organized by participant ID and aligned with corresponding research questions. During this phase, initial observations and emerging patterns were noted in memos and marginal notes. This step aimed to ensure a comprehensive understanding of the participants' responses and the context surrounding their perspectives on leadership and SSCM.

In Step 2, the researcher generated initial codes from the data (Christou, 2023; Dejonckheere et al., 2024). These codes represented segments of the text that relate to the research questions, such as leadership strategies, sustainability barriers, organizational culture, and decision-making practices. An open coding strategy allowed the researcher to inductively derive codes from the raw data without imposing pre-established categories (Mcleod, 2024). NVivo was used to highlight and tag these segments, linking them to the corresponding codes for ease of retrieval and comparison.

Step 3 involved searching for themes (Naeem et al., 2023). Codes that appear frequently or relate to similar concepts were grouped together into broader categories or potential themes (Naeem et al., 2023). For example, recurring responses about cross-functional teamwork, internal communication, and executive alignment emerged under a larger theme like “Collaborative Leadership Culture.” Similarly, discussions about regulatory challenges, supplier compliance, or resource limitations may cluster under a theme like “Barriers to SSCM Adoption.” This phase was exploratory, and themes evolved or merged as new patterns emerged during coding (Byrne, 2021).

In Step 4, the researcher reviewed and refined the themes to ensure they are coherent, distinct, and meaningfully related to the research questions (Naeem et al., 2023). During this stage, transcripts were reread in conjunction with the developed themes to validate that consistent data support each theme and do not significantly overlap with others. Themes lacking sufficient support or relevance were modified, merged, or discarded. Thematic saturation was monitored throughout this process to capture all meaningful ideas.

Step 5 of the analysis involved defining and naming the themes (Braun & Clarke, 2021; Naeem et al., 2023). The researcher described the core essence of each theme and identified subthemes when necessary. This stage ensures conceptual clarity and allows for a deeper understanding of the relationships between themes (Byrne, 2021). For example, a broader theme like “Transforming Sustainability Commitments into Strategy” included subthemes such as “Goal Alignment,” “Leadership Accountability,” and “Operational Execution.”

Finally, Step 6 produced the final report, in which the analysis's findings were described in narrative form, supported by direct quotes from participant interviews (Christou, 2023; Naeem et al., 2024). Each theme was presented in relation to the research questions, and a discussion followed to interpret how the findings contribute to answering those questions. The write-up also included a reflection on the researcher’s role, insights gained, and implications for leadership practices in sustainability-driven supply chains (Reynolds, 2024).

The researcher’s role in this qualitative study was central and interpretive. As the primary data collection and interpretation instrument, the researcher engaged in reflexivity (Olmos-Vega et al., 2023), a continuous process of critically examining one’s own assumptions, positionality, and potential influence on the research (Karcher et al., 2024). This was practiced through maintaining a reflexive journal throughout the study. For example, after finalizing the interview protocol, the researcher documented reflections on whether any questions reflected personal bias toward performance-based leadership outcomes and revised them accordingly to ensure neutrality. Personal biases, such as prior familiarity with sustainability leadership principles or expectations about how effective leaders behave, were acknowledged at the study's outset. These biases were monitored using bracketing (Grazel, 2025), which involved setting aside

preconceptions during data collection and analysis and through peer debriefing with academic mentors to enhance objectivity (Habibullah et al., 2023). To further strengthen credibility, member checking was employed, whereby participants reviewed their transcribed responses and were allowed to clarify or expand upon their statements before analysis began (Lloyd et al., 2024; McKim, 2023).

Throughout the process, efforts were made to ensure trustworthiness by establishing:

- Credibility through member checking and deep engagement with the data.
- Transferability via thick descriptions of context and participant experiences.
- Dependability by maintaining an audit trail of decisions and coding strategies.
- Confirmability through triangulation and use of NVivo to support objective data management.

This methodical approach to data analysis ensured that senior leaders' voices were authentically represented and that findings were directly tied to the study's overarching problem, purpose, and research questions.

### **Assumptions**

Several key assumptions underlie this qualitative multiple-case study. These assumptions were necessary for the proper interpretation and validity of the study's findings. The first assumption was that all participants would provide truthful, accurate, and reflective responses during the interview process. Since the study relies on senior leaders' lived experiences and professional insights regarding their role in SSCM implementation, it is assumed that participants openly share the challenges and successes they have encountered in their leadership

roles. Participants' honesty and transparency were essential to capturing the depth and richness of data required for meaningful thematic analysis (Braun & Clarke, 2024; Byrne, 2021).

The second assumption was that participants have sufficient knowledge and experience in sustainable supply chain management. This assumption was supported by the inclusion criteria, which require that participants have held a senior leadership position like CEO, COO, or Supply Chain Director in an MSMF in the United States for at least two years and be actively involved in sustainability-related decision-making. Therefore, it was assumed that participants were directly involved with SSCM strategies and were able to articulate relevant leadership practices, barriers, and organizational dynamics.

The third assumption was that participants represent a range of perspectives, including both positive and negative experiences with SSCM implementation. This diversity of perspectives was important to identify meaningful patterns and themes (Naeem, 2023). Because the study used purposive and snowball sampling, it was assumed that the resulting participant pool varied by firm size, industry sector, leadership style, and SSCM maturity level, thus enhancing the credibility and transferability of findings.

The fourth assumption was that thematic analysis using Braun and Clarke's six-step process, supported by the NVivo software, effectively identifies patterns across cases. This method was assumed to allow for consistent and rigorous data coding, leading to identifying themes that directly address the research questions.

Finally, the researcher was assumed to maintain objectivity and reflexivity throughout the data collection and analysis process (Jamieson et al., 2023). Although the researcher serves as the

primary instrument in qualitative research, potential bias was assumed to be minimized through bracketing, memoing (Thomas & Sohn, 2023), audit trails (Wittman & Brown, 2022), and member checking (Motulsky, 2021) to ensure that the interpretation of data accurately reflects participant perspectives rather than researcher preconceptions.

### **Limitations**

As with any qualitative research, several limitations may influence the scope and generalizability of this study's findings. The primary limitation of this study was the sample size and the non-random sampling method. Although the study includes 17 senior leaders from MSMFs, this number represents only a small subset of the broader population. Given the thousands of MSMFs operating in the United States, the insights collected from this limited number of cases may not capture the full range of leadership practices or supply chain challenges experienced across the industry.

Additionally, purposive sampling introduced certain biases (Lopez, 2023; Cash et al., 2022). While this approach was appropriate for identifying information-rich participants, it may have resulted in a participant pool with similar backgrounds, organizational cultures, or sustainability orientations, particularly if referrals originate from shared professional networks (Georgiadou & Syed, 2021). This could limit the diversity of perspectives and potentially influence the emergence of themes in a way that favors certain viewpoints over others.

The third limitation was the potential for participant hesitancy or withholding of information due to concerns about discussing internal company strategies or leadership practices (Lauring et al., 2022), primarily if participants were currently employed and felt uncertain about

how their responses would be used (Eaton & Heckscher, 2021). Despite assurances of confidentiality and the use of de-identified data, some participants may have hesitated to disclose negative experiences or critiques of their organization's sustainability efforts, which could impact the depth and authenticity of the collected data (Xu et al., 2023). To mitigate this concern, all participants were informed that the study had received Institutional Review Board (IRB) approval, that their participation was voluntary, and that their identities would be protected through pseudonyms, data de-identification, and secure, encrypted storage. These safeguards were clearly outlined in the informed consent form (see Appendix F) and reiterated during the pre-interview briefing to promote transparency and trust.

Another limitation of this study is the lack of a specific measure of return on investment (ROI) for the implementation of sustainable supply chain management practices. Because the study focused exclusively on leadership perspectives and qualitative thematic insights, financial outcomes, such as cost savings, efficiency gains, and long-term economic returns, were not quantified. As a result, the study does not evaluate the financial impact of SSCM initiatives, which may limit interpretations regarding economic performance or organizational profitability.

The virtual format of interviews may also serve as a limitation. Although video conferencing platforms such as Zoom or Microsoft Teams offer flexibility and accessibility, they can limit the researcher's ability to observe non-verbal cues or build rapport like face-to-face interviews might (Khan & Maceachen, 2022). In some cases, technical issues or a lack of participant comfort with the technology may also affect the quality of the interview (Tomas & Bidet, 2024).

Lastly, because the study was conducted in the United States, geographic, economic, and regulatory differences may affect the transferability of the findings to other countries or industry sectors. Regional sustainability regulations, corporate governance structures, and supply chain maturity levels may vary significantly, which could affect how leadership approaches SSCM implementation.

To mitigate these limitations, several strategies were employed. First, maximum variation sampling was used within purposive and snowball methods to ensure diversity in firm size, leadership roles, and sustainability experience. Second, member checking was conducted to enhance data accuracy and encourage participants to clarify or expand on their responses, thereby reducing the effects of participant hesitancy. Third, to offset the limitations of virtual interviews, the researcher used prolonged engagement techniques, such as conversational rapport-building and follow-up probing questions, to foster a more open dialogue. Finally, detailed contextual descriptions and a transparent audit trail were maintained throughout the analysis to strengthen the trustworthiness and transferability of the findings.

### **Delimitations**

This study includes several delimitations that the researcher intentionally set to narrow the scope of inquiry and align the research with the problem, purpose, and research questions. The first delimitation was the target population, which was limited to senior leaders such as CEOs, COOs, and Supply Chain Directors working in MSMFs in the United States. Firms outside the United States and leadership levels below senior management were excluded from the study to ensure the data reflected high-level strategic perspectives on SSCM implementation.

This choice aligned with the study's purpose of focusing on understanding leadership engagement in SSCM from those with decision-making authority and strategic oversight.

The second delimitation was the experience requirement, which means participants must have at least two years of direct involvement in SSCM decision-making. This was intentionally established to ensure that the participants possess sufficient depth of experience and insight related to sustainable practices in supply chains. Leaders without this level of engagement were excluded to maintain the relevance and richness of the data collected. This decision supports the study's alignment with the problem and research questions, which seek to explore how leadership influences SSCM adoption and implementation.

A third delimitation was the selection of a qualitative multiple-case study design, which is well-suited for exploring how senior leadership in MSMFs engages with SSCM in real-world organizational contexts. While methodologies such as phenomenology and ethnography are valuable, particularly for deeply exploring lived experiences or cultural meaning-making (Dodgson, 2023; McLeod, 2024; Maynard, 2025), this study was purposefully framed to examine strategic leadership behaviors and organizational patterns across multiple firms. Rather than deeply understanding individual or cultural narratives, the design focused on identifying cross-case themes and leadership practices that align with the study's theoretical foundation, which integrates Transformational Leadership Theory, Stakeholder Theory, and the Triple Bottom Line (TBL) framework. The multiple-case study approach thus supports the goal of generating transferable insights into leadership-driven sustainability strategies in diverse organizational settings.

Additionally, the study was delimited by using semi-structured interviews as the primary data collection method. Other qualitative methods, such as focus groups, direct observation, and document analysis, were not used. The decision to conduct one-on-one interviews supports the need for privacy, encourages candid responses, and allows for in-depth exploration of leadership practices in alignment with the study's purpose.

Finally, the sample size was limited to 17 participants. This range was adequate to achieve thematic saturation in qualitative multiple-case studies (Bouncken et al., 2025; Hennink & Kaiser, 2022). It ensured analytical manageability while allowing in-depth exploration of each case (Adams et al., 2022; Subedi, 2021). The approach aligned with established standards for qualitative rigor (Kowalski et al., 2024). It also enabled comparison of diverse leadership experiences across firms (Richardson, 2024).

### **Ethical Assurances**

This study received formal approval from the Institutional Review Board (IRB) at National University prior to commencing data collection. The IRB process ensured that all research involving human participants follows established ethical standards and that participants' rights, safety, and well-being are protected throughout the study.

Although this study did not involve medical interventions or high-risk activities, it required the collection of personal and professional experiences from senior leaders regarding organizational decision-making. Therefore, participants were provided with full disclosure of the study's purpose, procedures, and voluntary nature through an informed consent form. Each participant signed the consent form before participating in the research. Participants were told

that their involvement is entirely voluntary and that they may decline to answer any question or withdraw from the study at any time without penalty or consequence.

Confidentiality was maintained throughout the study. Participant names, organizations, and any identifying details did not appear in the final report or any published materials. Each participant was assigned a pseudonym or unique code to de-identify their responses. Interview transcripts, consent forms, and related documents were stored in a password-protected, encrypted folder on a secure external hard drive. Access was restricted to the researcher. All data will be retained for a period of three years in compliance with IRB requirements, after which it will be permanently destroyed. Electronic files will be securely deleted, and any printed materials will be shredded.

As the primary data collection and analysis instrument, the researcher's role required awareness of potential biases (Khatun, 2024). The researcher has prior academic and professional experience in the fields of leadership and sustainability, which may influence interpretations if not carefully managed. Several strategies were used to minimize personal bias and maintain analytical integrity to address this. Bracketing involves consciously setting aside personal beliefs and preconceptions during data collection and analysis to avoid undue influence (Habibullah et al., 2023; Thomas & Sohn, 2023). Memoing refers to the practice of writing reflective notes throughout the research process to capture emerging insights and document analytic decisions (Bingham, 2023). Member checking entails sharing interview transcripts or summaries with participants to verify accuracy and ensure that their perspectives are faithfully represented (McKim, 2023; Motulsky, 2021). Maintaining an audit trail involved systematically documenting the research process, including decisions, procedures, and analytic steps, to ensure

transparency and replicability (Carcary, 2020). Together, these strategies support the trustworthiness of the study by ensuring that the findings are grounded in participants' perspectives rather than the researcher's prior assumptions. All research procedures adhered strictly to ethical guidelines to ensure that participants' rights and dignity were respected and protected at all stages of the study.

## **Summary**

The problem and purpose statements, which formed the foundation of this study, guided the selection of the research methodology and design in this chapter. A qualitative research approach with a multiple-case study design was selected to explore how senior leaders in mid-sized manufacturing firms engage in implementing SSCM practices in the United States. In the context of this research, sustainability refers to organizational efforts that balance economic performance with environmental stewardship and social responsibility across the supply chain, ensuring long-term operational viability and ethical stakeholder engagement. The rationale for not using a quantitative or phenomenological design was explained, as the study aims to explore leadership strategies and organizational dynamics rather than measure variables or focus solely on lived experiences.

The interview protocol, with 17 participants, was selected using purposive and snowball sampling (Lopez, 2023; Cash et al., 2022). It targets senior leaders such as CEOs, COOs, and Supply Chain Directors with at least two years of SSCM-related decision-making experience. Semi-structured interviews were identified as the primary method for collecting data. NVivo software was used to assist in the thematic analysis using Braun and Clarke's six-phase process (Allsop et al., 2022).

Assumptions regarding participant honesty, experience, and diversity of perspectives were discussed. Limitations were acknowledged, including the small sample size, potential biases in snowball sampling, and constraints of virtual interviews. Strategies to mitigate these limitations were also presented. Delimitations were outlined to clarify the study's intentional boundaries, such as focusing on the United States of America, based on MSMFs, and selecting a specific leadership level.

Ethical assurances were addressed in accordance with IRB guidelines, including procedures for informed consent, data confidentiality, secure storage, and reflexivity to minimize researcher bias. With the methodology established and ethical protocols in place, the next chapter presents the study's findings, including thematic insights and analysis aligned with the research questions.

## Chapter 4: Findings

The problem addressed in this study was that senior leadership in mid-sized manufacturing firms in the United States lacked understanding of how to effectively engage in sustainable supply chain management (SSCM) practices. The purpose of this qualitative multiple-case study was to explore how senior leadership in mid-sized manufacturing firms in the United States engaged in SSCM practices to address the challenges of sustainability adoption, the factors that influenced their ability to translate sustainability commitments into actionable strategies, and the organizational culture factors that supported or hindered SSCM practices.

This chapter presents the results of data collected through 17 semi-structured interviews with senior leaders from mid-sized manufacturing firms across the United States. The interviews generated rich, descriptive data that reflect leadership attitudes, decision-making processes, and practical challenges related to SSCM. The results are presented in direct alignment with the three guiding research questions of this study, ensuring that findings remain connected to the overall research purpose. In qualitative research, it is essential to highlight participant voices; therefore, the results include verbatim quotations that illustrate and validate key themes. This structure allows for a transparent presentation of how conclusions were derived from the data.

The chapter is organized into four major sections. The first section discusses the trustworthiness of the data, addressing credibility, transferability, dependability, and confirmability as measures of rigor. The second section presents a detailed analysis of the results, organized by research question RQ1 through RQ3, with themes and subthemes supported by evidence from participant interviews. The third section presents a comparison of the findings

with existing literature, connecting new insights to prior studies and conceptual frameworks introduced in earlier chapters. The fourth section concludes with a summary of the findings, The research questions guiding this study and framing the results were:

***RQ1***

How do mid-sized manufacturing firms overcome challenges related to the adoption of SSCM practices?

***RQ2***

What factors influence senior leadership's ability to translate sustainability commitments into actionable strategies in mid-sized manufacturing firms?

***RQ3***

What organizational culture factors support or hinder the engagement of senior leadership in SSCM practices?

**Trustworthiness of the Data**

Data for this study were collected with careful attention to transparency, rigor, and consistency throughout the research process (Ahmed, 2024). Establishing trustworthiness was essential to ensure that the findings accurately reflect participants' lived experiences rather than researcher assumptions (Amankwaa, 2016). Four established criteria guided this process: credibility, transferability, dependability, and confirmability (Kakar et al., 2023; NU, 2025). Each element contributed to strengthening the quality of the research by addressing validity, applicability, consistency, and neutrality. Together, these elements ensured that the results of this study provide meaningful and reliable insights into sustainable leadership practices within mid-sized manufacturing firms.

***Credibility***

Credibility represents the confidence that can be placed in the truthfulness of the findings (Rahimi & Khatooni, 2024). It involves demonstrating that the study accurately captures and represents participants' perspectives (Ahmed, 2025). In this study, credibility was achieved through prolonged engagement with the data, iterative analysis, and systematic member checking. Transcripts of all 17 interviews were shared with participants to confirm accuracy and provide opportunities for clarification or correction. Triangulation was established by comparing perspectives across multiple firms, which reduced the likelihood of relying on isolated or biased accounts (Mcleod, 2024). NVivo 15 software further enhanced credibility by allowing for careful coding and pattern recognition, ensuring that themes emerged from participants' own words. By grounding interpretations in participant quotations and cross-case analysis, the study demonstrates the authenticity and accuracy of leadership experiences related to SSCM adoption (Pizzurno & Cammarano, 2024).

### ***Transferability***

Transferability refers to the extent to which the findings can be applied to other contexts or organizations (Allsop et al., 2022). Unlike quantitative generalization, qualitative transferability is achieved by providing detailed contextual information, allowing readers to determine its applicability to their own settings (Younas et al., 2023). In this study, thick descriptions of the organizational settings, leadership roles, and sustainability challenges were provided to strengthen transferability. The inclusion of multiple cases across diverse mid-sized manufacturing firms enhanced the range of perspectives and provided insights into common challenges and strategies. By documenting the recruitment process, interview procedures, and contextual characteristics of each firm, the study equips readers with sufficient information to judge relevance to similar organizations. Although the findings are specific to the U.S. mid-sized

manufacturing sector, they offer valuable lessons for other organizations facing identical sustainability challenges.

### ***Dependability***

Dependability addresses the consistency and stability of the research process over time (Kakkar et al., 2023). In this study, dependability was ensured through detailed documentation of the methodology, including interview protocols, coding procedures, and analytic decisions (NU, 2025). An audit trail was maintained to record the steps involved in data collection, analysis, and theme development, ensuring transparency and replicability (Bingham, 2023). NVivo software provided a structured platform for coding, promoting consistency across cases and minimizing the risk of human error. Peer debriefing with the dissertation chair and committee members allowed for external review of analytic choices and enhanced methodological rigor (Dado et al., 2023; Habibullah et al., 2023). The multiple-case study design also reinforced dependability by replicating data collection and analysis procedures across different firms, demonstrating that the research approach could be applied consistently (Allsop et al., 2022; Halkias & Newbert, 2020).

### ***Confirmability***

Confirmability emphasizes that findings are derived from the participants rather than researcher bias or personal preference (Taquette et al., 2022). To achieve confirmability, reflexivity, and bracketing were used throughout the study (Olmos-Vega et al., 2023). The researcher maintained a reflective journal to document assumptions, decisions, and insights during the research process, helping to separate personal perspectives from participants' experiences. NVivo supported confirmability by creating transparent links between interview quotations and the themes developed during analysis. Member checking further ensured that interpretations were aligned with the participant's intent, rather than the researcher's assumptions

(Lloyd et al., 2024; Motulsky, 2021). Finally, oversight by the dissertation committee provided an external check on the analytic process, confirming that interpretations were firmly grounded in the data. Collectively, these strategies ensured that the findings accurately represent the voices of participants and not the researcher's bias.

## **Results**

This qualitative multiple-case study examined how senior leaders in mid-sized manufacturing firms in the United States adopt and implement sustainable supply chain management (SSCM) practices. The purpose of the study was to explore leadership perspectives on the challenges, strategies, and cultural dynamics involved in embedding sustainability into supply chain operations. Seventeen executives, including CEOs, COOs, and Supply Chain Directors, participated in semi-structured interviews conducted via the online Zoom platform, which provided in-depth accounts of their organizational practices. The data collected from participant interviews were systematically examined using NVivo 15 to ensure consistency and accuracy in the analytic process. Themes were developed directly from the interview transcripts, allowing the findings to reflect the lived experiences and perspectives of the executives. For clarity, the results in this chapter are organized by research questions, with each section including representative quotations that illustrate the core ideas expressed by participants. The presentation of findings is descriptive in nature, focusing on the report rather than its interpretation.

### ***Participant Demographics***

Seventeen executives from mid-sized manufacturing firms participated in the study, providing a broad range of perspectives on SSCM. The participants held senior positions such as Chief Executive Officer (CEO), Chief Operating Officer (COO), and Supply Chain Director,

reflecting their significant leadership responsibilities. They represented a diverse range of industries, including retail, aerospace, HVAC, automotive, fabric, wood products, toys, steel, cosmetics, medical, glass, musical instruments, and precision manufacturing. This diversity ensured that the findings captured the unique challenges and strategies across multiple manufacturing sectors. Participants reported between 8 and 24 years of professional experience, demonstrating both emerging and seasoned leadership perspectives. The organizations they represented employed between 180 and 826 employees, positioning them firmly within the definition of mid-sized firms. Collectively, the demographic data proves that the study drew from an experienced, diverse, and representative group of leaders whose insights strengthen the validity of the results.

**Table 1**

*Participant Demographics*

<b>Participant</b>	<b>Role</b>	<b>Years of experience</b>	<b>Manufacturing industry</b>	<b>Number of employees</b>
<b>Spk1</b>	Supply Chain Director	12	Retail	687
<b>Spk2</b>	COO	8.5	Airplane	304
<b>Spk3</b>	COO	15	HVAC	180
<b>Spk4</b>	Supply Chain Director	19	Big-Rig	826
<b>Spk5</b>	COO	11	Auto parts	517
<b>Spk6</b>	Supply Chain Director	16	HVAC	552
<b>Spk7</b>	CEO	13	Fabric	219
<b>Spk8</b>	Supply Chain Director	9	Wooden	647
<b>Spk9</b>	Supply Chain Director	10	Toy	750

<b>Spk10</b>	CEO	21	Steel	815
<b>Spk11</b>	Supply Chain Director	8	Cosmetic	630
<b>Spk12</b>	Supply Chain Director	11	Medical	651
<b>Spk13</b>	Supply Chain Director	24	Glass	585
<b>Spk14</b>	Supply Chain Director	18	Music	633
<b>Spk15</b>	COO	9	Precision	400
<b>Spk16</b>	Supply Chain Director	12	Medical	475
<b>Spk17</b>	COO	21	Auto parts	253

### Data Analysis Process for Research Questions

The analysis for this study was conducted using NVivo software to code and organize data systematically collected from seventeen executive interviews. The process began with importing all interview transcripts and organizing them into cases, each case classified by participant role, industry, years of experience, and number of employees. This structure ensured that demographic attributes could be linked to the coded data, supporting a nuanced understanding of the responses.

Following the organization of transcripts, an open coding procedure was applied (Mcleod, 2025). Segments of text directly related to the interview protocol were coded into structured nodes corresponding to the three research questions (RQ1, RQ2, and RQ3). Within each research question node, further subnodes were created to align with the corresponding interview questions (IQ1–IQ9) and, where relevant, additional child nodes representing specific prompts. This hierarchical structure allowed data to be captured at multiple levels of detail (Daniels et al., 2024).

Once initial coding was completed, the study proceeded to a stage equivalent to axial coding, where related codes were reviewed and grouped into broader categories (Ahmed, 2024; Allsop et al., 2022). For example, within RQ1, codes describing supplier diversification, alternative sourcing strategies, and supplier development were grouped under the higher-level category of “Supply Chain Adaptation.” Similar processes were followed for RQ2 and RQ3, where categories such as strategic flexibility, financial alignment, leadership engagement, and organizational culture emerged. These groupings provided an initial framework for generating themes.

NVivo tools, such as word frequency queries and text search queries, were used to supplement the coding process and validate the categories. Word frequency queries highlighted the most common terms used across responses to each research question, and text search queries enabled a closer inspection of participant language (Naeem et al., 2023). This process helped ensure that the emerging categories were grounded in the data rather than being imposed by the researcher.

The next step involved refining categories into themes and subthemes. Selective coding was applied by reviewing axial categories and elevating the most salient ones to the level of themes, supported by subthemes that represented more specific dimensions of the participants’ experiences (Byrne, 2021; Naeem et al., 2023). For example, within RQ2, incremental goal setting, pilot testing, and financial alignment were consolidated as subthemes under the broader theme of “Strategic Flexibility.” Similarly, within RQ3, employee training, cross-functional collaboration, and transparent communication were grouped under “Organizational Culture and Leadership Engagement.”

Throughout this process, NVivo's coding metrics and reference counts were consulted to ensure that multiple participants, rather than isolated responses, supported the themes. Each theme was further validated by extracting direct quotations, which demonstrated how participants articulated their experiences in their own words. This iterative process allowed the findings to remain faithful to the voices of participants while also organizing the data into a coherent thematic structure.

Finally, the results are accessible by research questions. Each RQ is addressed with a summary of the coding process, a description of the identified themes and subthemes, and supporting participant quotations that provide a thick description of the experiences shared. This process ensured both analytic rigor and transparency, providing a trustworthy account of how executives in mid-sized manufacturing firms perceive and engage with sustainable supply chain management.

### ***RQ1***

RQ1 asked: How do mid-sized manufacturing firms overcome challenges related to the adoption of SSCM practices?

The responses gathered from executives highlighted a range of practical approaches to dealing with sustainability adoption challenges in their supply chains. As the interviews were reviewed, distinct patterns emerged that revealed how leaders navigated operational, financial, and organizational barriers. These recurring patterns were organized into three broad areas that captured the essence of their strategies. The first area focused on supply chain adaptation, where firms restructured sourcing and materials to better align with sustainability demands. A second area emphasized strategic flexibility, demonstrating how leaders adjusted goals, piloted initiatives, and aligned resources to maintain momentum throughout the implementation process.

The third area focused on organizational collaboration, involving employees, cross-functional groups, and communication strategies that supported the shift toward sustainability. Together, these three areas and their related dimensions illustrate the practical ways leaders translated challenges into workable solutions across diverse manufacturing contexts.

**Table 2**

*Themes and Subthemes Emerging from RQ1*

<b>Theme</b>	<b>Subtheme</b>
<b>Supply Chain Adaptation</b>	Supplier diversification
	Material innovation
	Supplier development programs
<b>Strategic Flexibility</b>	Incremental goal setting
	Pilot testing
	Financial Alignment
<b>Organizational Collaboration</b>	Cros-functional committees
	Employee training and engagement
	Transparent communication

### **RQ1 Theme 1: Supply Chain Adaptation**

Executives consistently emphasized that adapting existing systems was essential for embedding sustainability into supply chain practices while maintaining resilience. Participants described adaptation as an evolving, multidimensional process that required adjusting sourcing practices, innovating with materials, and investing in supplier development. For example, Spk8 explained, *“The biggest lesson was that sustainability and resilience go hand in hand,”*

highlighting the interdependence between environmental goals and operational strength.

Similarly, Spk14 noted, *“We are no longer just complying with the requirements, but using sustainability as a driver for innovation and long-term resilience.”* Executives acknowledged external drivers such as regulation and customer demand, with Spk4 affirming, *“Regulations, consumer expectation, and competition are powerful decision drivers,”* and Spk7 adding, *“Regulation sets the baseline, and customer expectations often go beyond what regulation demands.”* These voices reveal that adaptation was not a singular tactic, but a comprehensive orientation that shaped how firms approached sustainability.

***RQ1 Theme 1 - Subtheme 1: Supplier Diversification.*** Supplier diversification emerged as a central strategy for reducing risk and building resilience. Leaders described how spreading sourcing across multiple vendors allowed firms to guard against disruption while pursuing environmental benefits. Spk7 explained, *“For some products, we switched to regional suppliers to shorten lead times and lower our carbon footprint,”* while Spk8 emphasized, *“That incident became a case study for why supplier diversification is so crucial.”* These reflections were reinforced by Spk9, who warned, *“Trying to do this in isolation would have been a disaster,”* pointing to the risks of overreliance on single suppliers. In parallel, Spk4 remarked, *“Regulations, consumer expectation, and competition are powerful decision drivers,”* suggesting that diversification was motivated by both external and internal pressures. Spk1 further noted, *“Once people understand, they have the engagement, and you know that drives what I would call innovation inside a company,”* indicating that diversification was also tied to employee understanding and involvement. The leaders highlight that diversification is both a defensive and a proactive sustainability strategy.

***RQ1 Theme 1 - Subtheme 2: Material Innovation.*** Another adaptation strategy involved innovating materials to reduce environmental impacts while strengthening resilience. Leaders explained how they tested alternative inputs, collaborated with vendors, and invested in new product designs. For example, Spk2 described, *“We also wanted to push to our vendors to make sure that they are following sustainability practices when it comes to our materials.”* Spk5 added, *“We collaborate with both the supplier, and the R&D team to test alternative material that met durability and recyclability standards,”* highlighting a joint innovation effort. Some firms sought smaller partnerships to increase flexibility, with Spk13 stating, *“By engaging two or three small-scale local providers, we reduced dependency risks and strengthened our supply resilience.”* Spk7 reminded that *“Regulation sets the baseline, and customer expectations often go beyond what regulation demands,”* while Spk8 concluded, *“Implementally sustainable supply chain practices could not be handled by procurement alone.”* These voices illustrate that material innovation was both a technical and relational process, requiring collaboration both within and outside the firm.

***RQ1 Theme 1 - Subtheme 3: Supplier Development Programs.*** Executives also emphasized supplier development as a crucial component of adaptation, shifting beyond transactional relationships to establish long-term capabilities. Spk6 noted, *“Supplier development has become a standard agenda item. And we allocate a budget each year for joining joint projects aimed at emission reduction and material efficiency.”* Spk15 reinforced this collaborative approach, stating, *“We also leverage partnerships with customers and suppliers, sometimes co-investing in solutions.”* Others described capacity-building efforts, such as Spk5 who explained, *“We adopted a more collaborative approach, offering technical assistance, sharing data analysts to help suppliers improve their sustainability performance.”*

Spk9 emphasized the broader impact, reflecting, *“Supporting a supplier improvement process not only helps them meet our needs, but also strengthen the entire value chain.”* Similarly, Spk7 shared, *“We now involve supplier earlier, share technical resources when needed,”* pointing to the proactive integration of suppliers in sustainability planning. These participants demonstrate that supplier development was viewed as a strategic approach to integrating sustainability throughout the value chain.

### **RQ1 Theme 2: Strategic Flexibility**

Executives emphasized that flexibility in strategy was essential for advancing sustainable supply chain management while managing operational and financial realities. Leaders consistently described phased implementation, adjusting metrics, and using pilot testing as tools to ensure progress without overwhelming their organizations. Spk9 explained, *“But supplier delay and higher than expected cost. Push the... that timeline closer to 5-year. We also had to adjust our KPIs.”* Similarly, Spk8 reflected, *“Budget limitations mean we often implement initiatives in stages. For example, rolling out a waste reduction system, plant by plant, instead of company-wide, all at once.”* Spk10 added, *“We have had to adopt a phased approach targeting low-hanging fruit first, like increasing scrap steel content, improving energy efficiency,”* while Spk12 noted, *“These hurdles means we have had to approach sustainability as an incremental, continuous improvement effort, rather than a rapid transformation.”* Spk17 reinforced this sentiment, stating, *“Progress is, like, often, in incremental, and, patience is, required.”* Collectively, these voices emphasize that strategic flexibility was not a matter of abandoning goals, but instead of pacing and sequencing them to align with organizational and external conditions.

**RQ1 Theme 2 – Subtheme 1: Incremental Goal Setting.** Leaders framed incremental progress as critical for managing expectations and building resilience in sustainability initiatives. Spk12 explained, *“These hurdles means we have had to approach sustainability as an incremental, continuous improvement effort, rather than a rapid transformation.”* Spk17 echoed this view, reflecting, *“Progress is, like, often, in incremental, and, patience is, required.”* Spk15 added nuance, remarking, *“Ultimately, the effect was twofold. We had to refine our strategy to be more realistic, and we had to communicate more clearly about what we could control versus but depend on external parties.”* Similarly, Spk9 explained, *“We also had to adjust our KPIs. Originally, we focused heavily on material percentage, but we shifted to broader impact metrics.”* These accounts demonstrate that goal setting was deliberately calibrated to balance ambition with organizational realities.

**RQ1 Theme 2 – Subtheme 2: Pilot Testing.** Executives consistently used pilot testing as a mechanism to validate new practices while minimizing operational risks. Spk4 recalled, *“We co-invested in testing composable material, conducting joint R&D to ensure shelf life, produce, integrity were maintained.”* Spk14 added, *“We also ran side-by-side pilot tests on different batches to ensure quality wasn't compromised.”* Similarly, Spk8 explained, *“Leadership encourages experimentation, especially small-scale pilots, before rolling out bigger change. this balance process... approach keep us competitive while avoiding costly missteps.”* Spk6 reinforced this emphasis on validation, stating, *“New idea must prove their value before before being skilled. Leadership... encourageous... experimentation, especially when it is aligned with the customer... pilot projects are our standard entry point.”* Finally, Spk10 described structured experimentation, saying, *“I also pushed for pilot projects, testing new materials or processes in*

*smaller batches before scaling up.*” These voices from leaders reveal that pilots served as controlled environments to build confidence, generate data, and scale initiatives responsibly.

**RQ1 Theme 2 – Subtheme 3: Financial Alignment.** Leaders acknowledged that aligning financial priorities with sustainability was one of the most challenging aspects of the adoption process. Spk3 explained, *“Replacing conventional material with greener alternatives or upgrading to more efficient production processes often means higher initial cost.”* Spk8 emphasized similar concerns, stating, *“Another obstacle is the cost factor. Sustainable material often come at premium and convincing both leadership and customer. Still absorb part of the cost can be tricky.”* Spk7 described how firms navigated this tension, noting, *“We set aside an innovation budget for small-scale trials, whether it was testing a new fiber blend or piloting a waste reduction process.”* Spk15 highlighted the role of collaboration, explaining, *“We also leverage partnerships with customers and suppliers, sometimes co-investing in solutions.”* Similarly, Spk10 shared, *“Internally, I instituted quarterly sustainability reviews with department heads. To ensure accountability, I also pushed for pilot projects.”* These reflections demonstrate that financial alignment necessitates a balance between internal budgeting, external partnerships, and framing sustainability as an investment in long-term value.

### **RQ1 Theme 3: Organizational Collaboration**

Executives emphasized that collaboration, both within and beyond the organization, is indispensable for embedding sustainability into supply chain practices. Participants consistently emphasized that sustainability could not be driven by procurement alone but required multi-level cooperation across departments and supply chain partners. Spk8 stated, *“Implementally sustainable supply chain practices could not be handled by procurement alone.”* Similarly, Spk4 observed, *“By involving the supplier and our internal team from beginning, we created a*

*problem-solving culture that kept the project moving forward.*” Spk9 confirmed this interdependency, explaining, *“Trying to do this in isolation would have been a disaster. Sustainability touches every part of our business, from product desig... across departments, collaboration, ens... cooperation is the engaging that makes SSCM work for us.”* Spk14 reinforced the supplier perspective, sharing, *“Externally, I engage directly with suppliers, sometimes traveling to visit them to better understand their limitations and explore ways we could support improvements.”* Similarly, Spk7 added, *“We now involve supplier earlier, share technical resources when needed, and build in longer lead times to allow the experimentation.”* These accounts reveal that collaboration was a structural necessity for effectively implementing sustainable practices.

***RQ1 Theme3 – Subtheme 1: Cross-Functional Committees.*** Executives emphasized that cross-functional committees are indispensable for integrating sustainability into governance and decision-making. Spk11 explained, *“We had people who were used to doing things one way for decades, and asking them to change required showing how innovation could make their work easier,”* underscoring how structured groups helped overcome resistance and align diverse practices. Spk12 emphasized that, *“The norms of continuous improvements also aligns with incremental environmental gains,”* showing how committees drew on existing cultural strengths to normalize sustainability. Formal oversight also emerged, with Spk16 noting, *“We adjusted the goal to 10% over 5 years to allow for the compliance testing and supplier readiness,”* illustrating how committees balanced ambition with practical pacing. Spk17 reinforced this incremental framing, stating, *“Rather than broad-sweeping changes, we learned to prioritize incremental steps that build toward long-term outcomes,”* highlighting how committees provided a phased roadmap for adoption. Financial oversight was also part of their remit, as Spk3 explained,

*“Replacing conventional material with greener alternatives or upgrading to more efficient production processes often means higher initial cost,”* pointing to the need for committee-level evaluation of resource trade-offs. These voices reveal that cross-functional committees were not symbolic, but instead functioned as critical governance bodies that coordinated cultural change, structured implementation, and financial alignment across the organization.

***RQ1 Theme 2- Subtheme 2: Employee Training and Engagement.*** Executives stressed that training employees and engaging them in sustainability initiatives built organizational commitment. Spk9 explained, *“I invested in training for our resourcing team to spot and verify sustainability material.”* Spk14 shared, *“We held workshops to explain why sustainability matters, not just as a trend, but as essential to the longevity of our business.”* Spk17 reinforced the role of communication, stating, *“Employee communication and training played a central role in overcoming both activisms and operational barriers.”* Similarly, Spk15 explained, *“To change that mindset, we launched a series of workshops and training modules that explain the why behind these efforts.”* Spk16 described structured reinforcement, saying, *“Employee communication and training played a significant role in building momentum for sustainability... we also introduced a sustainability spotlight in our monthly all-hands meeting.”* Collectively, these leaders show that training empowered employees by linking sustainability to both strategic and operational goals.

***RQ1 Theme 3 – Subtheme 3: Transparent Communication.*** Transparent communication was consistently described as a mechanism for building accountability and alignment across firms. Executives emphasized that clear and open messaging helped employees and stakeholders understand sustainability priorities and their role in achieving them. For instance, Spk6 shared, *“Using these frameworks help us maintain transparency in the decision-making... It also allows*

*us to benchmark our effort against peers in HVAC manufacturing,”* underscoring the value of external and internal clarity. Similarly, Spk7 noted, *“Goals are set at the company level, and then broken down into department-specific targets with clear ownership... This transparency helps every employee understand not just the company direction, but their personal role in achieving it,”* reflecting how communication cascaded throughout the organization. Spk4 explained the formalization of this process: *“We begin each financial year with company-wide meetings outlining our sustainability objectives... Progress updates are provided quarterly through reports, dashboards, and team meetings. Thus, transparency creates accountability.”* In line with this, Spk5 highlighted deliberate information sharing, stating, *“Our strategic plans included a dedicated sustainability section... quarterly updates are shared through town halls, departmental meetings, and an internet dashboard that shows progress towards key metrics.”* Finally, Spk9 described how consistent communication shaped culture, remarking, *“Over time, these efforts created a sense of pride and ownership... Communication kept everyone aligned, and incentives kept the momentum going.”* Together, these statements reveal that transparency is not only for reporting progress but also for embedding sustainability into everyday dialogue, structures, and organizational identity.

## **RQ2**

RQ2 asked: What factors influence senior leadership’s ability to translate sustainability commitments into actionable strategies in mid-sized manufacturing firms?

The insights shared by executives revealed several critical factors that shaped how leaders moved sustainability commitments from vision to execution. As interviews were analyzed, it became clear that leadership effectiveness depended not only on personal conviction but also on aligning resources, responding to external pressures, and fostering organizational

readiness. Three broad themes emerged from the data: Leadership Vision and Commitment, Resource Allocation and Financial Prioritization, and Stakeholder Influence and External Pressures. These findings emphasize that sustainability leadership is not exercised in isolation but emerges at the intersection of internal strategy, financial alignment, and stakeholder expectations.

**Table 3**

*Themes and Subthemes Emerging from RQ2*

<b>Themes</b>	<b>Subthemes</b>
<b>Leadership vision and commitment</b>	Long-term strategic orientation
	Role modeling and accountability
	Integration into organizational goals
<b>Resource allocation and financial prioritization</b>	Budgeting for sustainability initiatives
	Cost-benefit justification
	Leveraging external support
<b>Stakeholder influence and external pressures</b>	Regulatory compliance and standards
	Customer demands and market expectations
	Supplier collaboration and dependence

### **RQ2 Theme 1: Leadership Vision and Commitment**

Executives consistently underscored leadership vision and commitment as the cornerstone for translating sustainability pledges into actionable strategies. They emphasized that sustainability could not be treated as a passing initiative but needed to be embedded in long-term organizational orientation, supported by visible role modeling and integration into strategic

goals. Leaders reflected on their evolving priorities, explaining how their focus had shifted from short-term compliance to long-term innovation and resilience. For example, Spk11 explained, *“Five years ago, sustainability was more about compliance, reacting to regulation and customer requests. Innovation was primarily focused on product performance and aesthetics. Now, we see it as a long-term driver of competitiveness.”* Similarly, Spk12 noted, *“These hurdles means we have had to approach sustainability as an incremental, continuous improvement effort, rather than a rapid transformation,”* highlighting the gradual but deliberate process of embedding sustainability into vision. Spk10 reinforced this by sharing, *“Instead of rapid 3-year overall, we have had to adopt a phased approach targeting low-hanging fruit first, like increasing scrap steel content, improving energy efficiency, and reducing water uses in cooling systems.”* Collectively, these executives demonstrate that leadership vision is anchored in sustainability initiatives, driven by strategic foresight, personal accountability, and integration into the organizational culture.

***RQ2 Theme 1 – Subtheme 1: Long-Term Strategic Orientation.*** Participants consistently emphasized that sustainability could not be achieved through quick, sweeping changes but instead required a phased, long-term approach. Spk12 explained, *“These hurdles means we have had to approach sustainability as an incremental, continuous improvement effort, rather than a rapid transformation.”* Similarly, Spk14 reflected on the need for realistic pacing, stating, *“Instead of an all-at-one shift, we had to phase our goals... incremental increase in certified materials rather than a full transition within a short time frame.”* Spk16 described how regulatory barriers forced recalibration, noting, *“Instead of aiming for the 20% reduction in emissions within 3 years, we adjusted the goal to 10% over 5 years to allow for compliance testing and supplier readiness.”* Spk13 shared a similar perspective, admitting, *“We went into*

*our sustainability journey with some ambitious targets... but it quickly became clear that we had to pace our approach more gradually.*” Reinforcing this pragmatic mindset, Spk17 remarked, *“Rather than broad-sweeping changes, we learned to prioritize incremental steps that build toward long-term outcomes.”* Spk11 acknowledged that initial goals were overly ambitious, explaining, *“Our initial sustainability roadmap was overly optimistic... we planned to hit certain packaging milestones in 3 years, but quickly realized some targets were going to require 5 or more.”* These reflections highlight how leaders framed sustainability as a gradual, long-horizon strategy designed to balance ambition, feasibility, and stakeholder expectations.

**RQ2 Theme 1 – Subtheme 2: Role Modeling and Accountability.** Another subtheme that emerged was the importance of leaders' role modeling sustainable practices and embedding accountability mechanisms to ensure progress. Spk11 described how they elevated sustainability at the executive level, explaining, *“I made sustainability a standing agenda item in our executive meeting, so it was not treated as a side project.”* In a similar vein, Spk15 emphasized leading by example, stating, *“Personally, I also led by example, making sure my team saw me prioritize sustainability choices, even when it required short-term trade-offs.”* Accountability was also reinforced through formal structures. Spk12 noted, *“I aligned our sustainability objectives with regulatory and operational constraints... embedding it into existing processes like supplier audits and capital expenditure planning.”* Spk13 added that creating dedicated forums helped ensure accountability, sharing, *“We launched a small sustainability champions group from different departments to help identify quick wins, like reducing scrap rates or optimizing furnace batch loads.”* Incentives were tied to leadership accountability as well. Spk16 explained, *“We introduced a sustainability spotlight in our monthly all-hands meeting, where teams could share successes or lessons learned... some goals were tied into performance bonds.”* Spk17 reinforced

this connection between leadership actions and accountability structures, remarking, “*we established a cross-functional sustainability committee that meets quarterly to review the progress and set the prioritize and align messaging*” Collectively, these insights show that leaders not only signaled the importance of sustainability by modeling behaviors themselves but also institutionalized accountability through governance systems, performance reviews, and recognition mechanisms.

***RQ2 Theme 1 – Subtheme 3: Integration into Organizational Goals.*** Leaders repeatedly emphasized that sustainability could not remain a secondary initiative but needed to be integrated into the broader organizational goals and performance frameworks. Spk11 explained how they shifted sustainability into the core of executive decision-making, noting, “*I pushed for cross-department ownership, procurement, R&D, marketing, and operations all had defined sustainability KPIs.*” Similarly, Spk12 emphasized embedding sustainability into standard practices rather than treating it as an add-on, stating, “*Instead of treating sustainability as a separate extra, I embedded it into existing processes like supplier audits and capital expenditure planning.*” Spk14 described how integration was achieved by aligning operational success with sustainability outcomes, explaining, “*I worked with the leadership team to integrate sustainability into our operational KPIs, so it became part of how we measure success.*” For Spk15, the same principle applied to governance and contracts, as they remarked, “*For strategic suppliers, we offered support in developing reporting capabilities and aligned contracts with sustainability expectations.*” Spk16 highlighted the importance of involving all business functions in planning and accountability, saying, “*We established a cross-functional sustainability committee that meets quarterly to review progress and set priorities and align messaging.*” Similarly, Spk17 underscored how integration strengthened organizational culture

and direction, reflecting, *“At the leadership level, we created a cross-functional sustainability council that met quarterly to review progress, align priorities, and resolve conflicts.”* The executives demonstrate that leaders not only voiced sustainability as a long-term vision but also ensured it was institutionalized within the organization's strategies, goals, and measurement systems.

## **RQ2 Theme 2: Resource Allocation and Financial Prioritization**

A recurring theme in the interviews was the challenge of aligning sustainability goals with financial realities, particularly in mid-sized firms, where budgets are tighter than those of large corporations. Leaders frequently acknowledged that resource allocation was a deciding factor in determining the pace and scope of sustainability initiatives. Spk11 highlighted the trade-offs required, explaining, *“I reallocated budget towards supplier partnerships and pilot programs. This made funding smaller batches of trials for sustainable packaging and allocating time for supplier site visits to validate claims.”* Spk12 reinforced this perspective by noting, *“In a mid-sized company, we didn’t have the budget flexibility that large corporations do. Sustainable materials and processes often come with a higher upfront price.”* Similarly, Spk13 described the tension between ambition and available resources, admitting, *“We went into our sustainability journey with some ambitious targets... but it quickly became clear that we had to pace our approach more gradually because infrastructure upgrades cost more and took longer than planned.”* In the automotive sector, Spk15 explained how financial prioritization shaped supplier decisions: *“Internal pushback around cost implications created resistance to investing in greener technologies, like switching to more energy efficient production equipment, because the payback wasn’t immediate.”* Echoing this concern, Spk16 observed, *“Some managers viewed sustainability initiatives as adding cost and complexity without immediate ROI, which slowed*

*our progress.*” Spk17 described adopting a more pragmatic approach by linking financial choices to strategic gains, stating, *“We invested in targeted pilot projects... this allowed us to test feasibility and build internal confidence before scaling, even if it meant absorbing short-term costs.”* Spk14 emphasized the importance of framing sustainability in terms of business longevity, explaining, *“I made sure employees saw small wins, like how waste reduction efforts in finishing translated into both environmental and cost benefits.”* These insights demonstrate that financial prioritization is not only a barrier but also a tool leaders use to balance ambition and feasibility.

***RQ2 Theme 2 – Subtheme 1: Budgeting for Sustainability Initiatives.*** Budgeting emerged as a critical subtheme, as leaders repeatedly emphasized the financial constraints of mid-sized firms and the need to prioritize sustainability spending carefully. Spk11 explained how sustainability required intentional reallocation of funds, noting, *“I reallocated budget towards supplier partnerships and pilot programs. This made funding smaller batches of trials for sustainable packaging and allocating time for supplier site visits to validate claims.”* Similarly, Spk12 described how limited budgets forced a measured approach, stating, *“In a mid-sized company, we didn’t have the budget flexibility that large corporations do. Sustainable materials and processes often come with a higher upfront price.”* Spk13 admitted that ambitions had to be scaled against resource realities, saying, *“We went into our sustainability journey with some ambitious targets... but it quickly became clear that we had to pace our approach more gradually because infrastructure upgrades cost more and took longer than planned.”* Another executive highlighted similar pressures, with Spk15 observing, *“Internal pushback around cost implications created resistance to investing in greener technologies, like switching to more energy efficient production equipment, because the payback wasn’t immediate.”* For Spk16,

limited budgets also fed skepticism, as they recalled, *“Some managers viewed sustainability initiatives as adding cost and complexity without immediate ROI, which slowed our progress.”* Spk17 highlighted the role of cautious financial planning, remarking, *“We invested in targeted pilot projects... this allowed us to test feasibility and build internal confidence before scaling, even if it meant absorbing short-term costs.”* Spk14 pointed out the importance of making the business case for sustainability in financial terms, explaining, *“I made sure employees saw small wins, like how waste reduction efforts in finishing translated into both environmental and cost benefits.”* These leaders demonstrate that budgeting for sustainability is both a limiting factor and a strategic lever.

**RQ2 Theme 2 – Subtheme 2: Cost–Benefit Justification.** Leaders repeatedly emphasized that sustainability initiatives only gained legitimacy when they were tied to clear financial returns and cost savings. Spk4 explained, *“We also track performance using environmental, social, governance, ESG criteria, which help us communicate results to investors and partners. Now, triple bottom line. TBL framework, people, planet, profit. Guides, our decision making, ensuring that social and environmental impacts are weighted alongside financial outcomes.”* Spk6 highlighted the same dynamic by noting, *“Well, while financial short, we, we had a clearance, ROI, Model 2... Model 4, Sustainability Investment. We also... Partnered closely with our corporate. Sustainability Office to align our action with overall company target.”* Similarly, Spk8 connected innovation directly to financial accountability, stating, *“Innovations is valued, but it must pass the test of practically? And a return on investment. Leadership encourages experimentation, especially small-scale pilots, before rolling out bigger change.”* Spk9 emphasized the importance of measuring tangible results, explaining, *“Economic metric measures cost saving from efficiency improvement, return on investment from sustainable*

*product line, and market share growth linked to eco-friendly offering.” Spk10 captured the overall logic behind cost–benefit framing by reflecting, “This initiative not only delivered a sustainability, but also improved our cost. Competitism has brought help to skeptic on board. It proved that green initiatives can deliver both environmental and financial returns.” These reflections reveal that participants consistently justified sustainability by aligning environmental goals with profitability, efficiency, and market competitiveness.*

***RQ2 Theme 2 – Subtheme 3: Leveraging External Support.*** Participants emphasized that external validation and partnerships were crucial in building credibility and advancing sustainability practices. Spk5 explained, *“Internal validation, such as third-party audits, ISO 14001 certification, and the CDP Carbon Disclosure Project reporting offer independent verification that our data is accurate, and our claims credible.”* Spk6 highlighted the role of technology and oversight, noting, *“We rely on a mix of internal systems and a third-party platform... We choose a third-party sustainability software that aligns with the GHG protocol standards. Supplier audit, both internal and external, provide quality active verification.”* Similarly, Spk7 underscored growing market pressures, stating, *“Customers and investors increasingly want independent proof. So we rely heavily on external validators like Oeko-Tex and third-party supplier audits. These certifications verify that our claims are accurate, and they hold suppliers to the same standard.”* Spk9 also described the reliance on external systems, remarking, *“For supplier performance, we used a third-party audit platform that consolidates data from factory inspections, certifications, and environmental reports... Externally, we rely on certification bodies for independent validation.”* Spk10 reinforced the connection between external assurance and trust, explaining, *“External validation, like ISO certifications and third-party assessments, serve as credibility and transparency. These are important for investor*

*confidence, customer trust, and regulatory compliance.*” Spk11 reflected on the dual role of validation, stating, *“External validation, like third-party audits and certifications such as ISO 14001 for environmental management, serve two purposes. They verify our claims for stakeholders and push us to meet higher standards.”* These executives demonstrate that external support from certifiers, auditors, and industry platforms was not peripheral but central to ensuring trust, transparency, and long-term sustainability adoption.

### **Theme 3: Stakeholder Influence and External Pressures**

Leaders highlighted that a wide range of external stakeholders applied both pressure and motivation to advance sustainability. Spk4 explained, *“Well, stakeholders' feedback was both a source of pressure and motivation. Investors sought ...”* Spk6 described the complexity of responding to these dynamics, stating, *“Stakeholder feedback comes from multi-directions.”* Spk7 reinforced the influence of market actors, noting, *“we rely heavily on external validators.”* Similarly, Spk8 pointed to regulatory oversight as a defining external challenge, remarking, *“On the regulatory side, meeting both EU timber regulation and U.S. Lacey Act ...”* Spk17 summarized how multiple forces converged, stating, *“Stakeholders' feedback came from multiple directions and varied in intensity.”* These statements reveal that customers, investors, regulators, employees, and community stakeholders exerted constant and diverse pressures that shaped leadership decision-making and reinforced the integration of sustainability into organizational practices.

***RQ2 Theme 3 – Subtheme 1: Regulatory Compliance and Standards.*** Executives repeatedly highlighted regulations as a foundation for sustainability adoption. As Spk7 emphasized, *“Regulation sets the baseline,”* underscoring its role as the minimum threshold that guided company practices. Spk4 expanded on this point, noting, *“Regulations, consumer*

*expectation, and competition are powerful decision drivers,*” illustrating how compliance was interwoven with market and social pressures. Meeting these standards often came with financial trade-offs. Spk3 admitted, *“Replacing conventional material with greener alternatives or upgrading to more efficient production processes often means higher initial cost.”* Similarly, leaders acknowledged that compliance required patience and persistence. Spk12 reflected, *“These hurdles means we have had to approach sustainability as an incremental, continuous improvement effort, rather than a rapid transformation.”* These perspectives show that while regulatory frameworks provided structure, firms had to balance costs, market dynamics, and gradual implementation to align with sustainability standards fully.

***RQ2 Theme 3 – Subtheme 2: Customer Demands and Market Expectations.*** Executives emphasized that customer and market expectations were central to advancing sustainability practices. Spk1 noted this generational shift, explaining, *“Consumer expectation... especially, you know the millennials and the Gen. Zs, they do focus a lot on this on sustainability efforts.”* Spk4 reinforced the role of external drivers, observing, *“Regulations, consumer expectation, and competition are powerful decision drivers.”* Several leaders highlighted that markets often demanded more than regulations required. As Spk7 stated, *“Customer expectations often go beyond what regulation demands.”* This was echoed by Spk9, who explained, *“Externally, regulations and retailer requirements are major drivers... Consumer expectations are another strong influence.”* Spk14 summarized this alignment of pressures by noting, *“Externally, regulatory requirements and customer expectations are the two strongest influences.”* These voices reveal that meeting customer demands was not optional; it directly shaped strategy, credibility, and the pace of sustainability adoption.

**RQ 2 Theme 3 – Subtheme 3: Supplier Collaboration and Dependence.** Executives emphasized that working closely with suppliers was essential to meeting sustainability commitments, as collaboration often determined whether initiatives could succeed. Spk6 explained the long-term nature of these partnerships, stating, “*we partner with a key supplier to... Conduct. joint, RD testing...*” Similarly, Spk7 described the importance of early engagement, noting, “*We now involve supplier earlier, share technical resources when needed, and build in longer lead times to allow the experimentation.*” Spk5 highlighted co-development efforts, observing, “*We collaborate with both the supplier, and the R&D team to test alternative material that met durability and recyclability standards.*” Beyond technical cooperation, financial collaboration also played a role. As Spk15 explained, “*We also leverage partnerships with customers and suppliers, sometimes co-investing in solutions.*” Spk8 reinforced this interdependence, remarking, “*Yes, absolutely. Implementally sustainable Supply chain practices could not be handled by procurement alone.*” These executives demonstrate that supplier collaboration was not merely supportive, but fundamental, as firms relied on suppliers for innovation, compliance, and the scaling of sustainability practices.

### **RQ3**

RQ3 asked: What organizational culture factors support or hinder the engagement of senior leadership in SSCM practices?

The interviews revealed that organizational culture played a decisive role in either enabling or constraining senior leadership’s engagement with SSCM. Three central themes emerged from the analysis. The first centered on cultural alignment with sustainability values, where embedding sustainability into organizational missions and reinforcing it through shared purpose and recognition created a strong foundation for leadership engagement. The second

focused on organizational norms and mindset, highlighting how traditions, incremental change, and openness to risk-taking shaped the pace and depth of sustainability adoption. Finally, employee empowerment and buy-in proved critical, as training, grassroots initiatives, and incentive structures encouraged active participation across all levels of the organization, reducing resistance and amplifying leadership's influence. These cultural dimensions underscore that leadership engagement in SSCM does not occur in isolation but is deeply interwoven with the broader organizational culture that sustains or obstructs long-term sustainability efforts.

**Table 4**

*Themes and Subthemes Emerging from RQ3*

<b>Themes</b>	<b>Subthemes</b>
<b>Cultural alignment with sustainability values</b>	Embedding sustainability into core organizational values
	Creating a shared sense of purpose across all levels
	Reinforcing sustainability through rituals, symbols, and recognition
<b>Organizational norms and mindset</b>	Balancing tradition with innovation
	Normalizing incremental change
	Risk-taking and experimentation culture
<b>Employee empowerment and Buy-in</b>	Training and education programs to build awareness
	Encouraging grassroots initiatives and employee-led projects

	Incentives and recognition systems that reward sustainable practices
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### **RQ3: Theme 1: Cultural Alignment With Sustainability Values.**

Participants emphasized that sustainability needed to be part of the organizational culture and not just a temporary project. Spk2 explained, *“We also wanted to push to our vendors to make sure that they are following sustainability practices when it comes to our materials.”* Spk9 added, *“I invested in training for our resourcing team to spot and verify sustainability material.”* Highlighting the challenge of integration, Spk12 noted, *“These hurdles means we have had to approach sustainability as an incremental, continuous improvement effort, rather than a rapid transformation.”* To reinforce values internally, Spk14 shared, *“We held workshops to explain why sustainability matters, not just as a trend, but as essential to the longevity of our business.”* Leadership’s role was underscored by Spk15, who remarked, *“Leadership values set the tone. In our case, having leaders who emphasize long-term responsibility and transparency has made a big difference.”* These verbatim accounts show how embedding sustainability into organizational values created alignment across leadership, employees, and external stakeholders.

***RQ3 Theme 1 – Subtheme 1: Embedding Sustainability into Core Organizational Values.*** Executives highlighted that sustainability had to be woven into the organization’s values to drive meaningful change. Spk1 pointed to governance integration, noting, *“So we have a board of directors, you know, board of supervisors as well,”* showing that leadership structures were engaged in setting sustainability priorities. Spk3 emphasized the principle of committing resources despite challenges, explaining, *“Replacing conventional material with greener alternatives or upgrading to more efficient production processes often means higher initial*

*cost.*” Similarly, Spk4 reflected on the external drivers that shaped values, stating, “*Regulations, consumer expectation, and competition are powerful decision drivers.*” From a practical standpoint, Spk6 reinforced the role of supplier development as part of this cultural embedding, noting, “*Supplier development has become a standard agenda item. And we allocate a budget each year for joining joint projects aimed at emission reduction and material efficiency.*” Spk7 echoed this integration by describing shared accountability, saying, “*Regulation sets the baseline,*” and adding that “*Customer expectations often go beyond what regulation demands.*” Spk8 captured the link between culture and resilience, asserting, “*The biggest lesson was that sustainability and resilience go hand in hand.*” Collectively, these insights show that sustainability was not treated as an isolated project, but as a guiding value embedded into governance, resource allocation, and long-term decision-making.

***RQ3 Theme 1 – Subtheme 2: Creating a Shared Sense of Purpose Across All Levels.***

Executives emphasized that incorporating sustainability into practice requires engaging people at every level of the organization, rather than confining responsibility solely to leadership. Spk9 shared how this was enacted in practice, stating, “*I invested in training for our resourcing team to spot and verify sustainability material.*” This effort positioned employees as active contributors to sustainable operations. Similarly, Spk14 stressed the importance of education for alignment, explaining, “*We held workshops to explain why sustainability matters, not just as a trend, but as essential to the longevity of our business.*” From a strategic perspective, Spk12 described sustainability adoption as a collective and gradual process, remarking, “*These hurdles means we have had to approach sustainability as an incremental, continuous improvement effort, rather than a rapid transformation.*” Spk17 pointed to the cultural and behavioral dimension of shared purpose, stating, “*Progress is, like, often, in incremental, and, patience is, required.*”

These verbatims show that creating a shared sense of purpose requires training, leadership reinforcement, and a recognition that sustainability is advanced incrementally through contributions across all organizational levels.

***RQ3 Theme 1 – Subtheme 3: Reinforcing Sustainability through Rituals, Symbols, and Recognition.*** Leaders emphasized that sustainability became culturally meaningful when reinforced through structured rituals, visible symbols, and consistent recognition. Spk6 shared, *“We have learned that recognition is just so powerful as financial reward.”* Spk8 observed, *“It made us communicate more transparently,”* suggesting that open reporting served as a symbolic act to strengthen accountability and trust. Spk14 reflected, *“We held workshops to explain why sustainability matters, not just as a trend, but as essential to the longevity of our business,”* describing how rituals like training reinforced shared values. Spk15 added, *“sustainability reporting as part of their supplier context,”* highlighting how measurement practices became routine markers of progress. Complementing these views, Spk16 stated, *“we engaging a third party added a premium for supplier certification, particularly for high-risk reasons,”* demonstrating how recognition from external stakeholders reinforced internal discipline. These verbatim quotes illustrate that rituals, symbols, and recognition were crucial in embedding sustainability into the organizational culture.

**RQ3 Theme 2: Organizational Norms and Mindset.**

Leaders emphasized that organizational norms and mindset shaped how sustainability became embedded into daily practices and decision-making. Spk1 noted, *“organizational culture is a really big thing when it comes to implementing these change...,”* highlighting how leadership tone influenced collective mindset. Spk4 explained, *“Values like integrating our building and innovation have greatly helped advance sustainability... ,”* showing both enabling

and constraining forces within culture. Similarly, Spk9 reflected, *“What’s helped is our culture of innovation and pride in product quality...”* suggesting that shared beliefs and small wins helped change attitudes. Spk10 emphasized, *“Values like pride in craftsmanship, commitment to safety, and a history of process improvement have been strong enablers...,”* underscoring the dual role of traditions in enabling or stalling progress. In the same way, Spk12 noted, *“A strong quality culture has helped... the norms of continuous improvements ...,”* demonstrating that ingrained practices both supported and constrained change. Spk13 echoed this, stating, *“One value that helps in our pride in quality and efficiency...”* reflecting tensions between efficiency and sustainability. Complementing these perspectives, Spk15 concluded, *“A value that has helped us most in our strong focus on efficiency...”* illustrating how cultural expectations influenced prioritization. These executives reveal that organizational norms and mindset serve as the foundation on which sustainability can either flourish or falter, depending on whether values align with long-term environmental goals.

***RQ3 Theme 2 – Subtheme 1: Balancing Tradition With Innovation.*** Executives described the tension between long-standing methods and new practices as a practical balancing act: Spk10 noted, *“internally, our production relies on equipment with decades-long life cycles. Replacing or retrofitting those assets for lower emissions involves significant downtime and capital investment,”* underscoring why change must be paced within legacy constraints. Spk13 pointed to ingrained habits that slow adoption, saying, *“Yes. One of the biggest.... Is the idea. That we have always done it this way,”* which makes experimentation harder until benefits are visible. To integrate innovation without disruption, Spk7 explained, *“we have built flexibility into our production schedule, so we can trial sustainable material without disturbing poor orders. Strategically, we have made sustainability a standing agenda. Item in team meetings,”*

keeping new ideas tethered to routine decision forums. Spk8 emphasized cultural convergence rather than bolt-ons: *“Over time, I’ve seen sustainability and innovation merge into single mindset.”* Leadership also used structured rituals to bridge tradition and change; as Spk14 shared, *“We held workshops to explain why sustainability matters, not just as a trend, but as essential to the longevity of our business.”* Pilots and supplier co-development anchored innovation inside established systems; Spk6 detailed, *“Piloting owner, limited product line. Before scaling,”* which tests changes safely before broad deployment.

***RQ3 Theme 2 – Subtheme 2: Normalizing Incremental Change.*** Executives emphasized that sustainability gained traction when it was introduced through gradual steps that normalized change rather than overwhelming employees with sweeping reforms. Spk9 reflected, *“Clear communications, training, and the small early wins have helped shifted the perception,”* showing how modest achievements built confidence. Spk12 noted, *“The norms of continuous improvements also aligns with incremental environmental gains,”* underscoring how existing practices supported steady progress. Spk17 explained, *“Rather than broad-sweeping changes, we learned to prioritize incremental steps that build toward long-term outcomes,”* highlighting that leaders intentionally framed sustainability as a gradual process. Similarly, Spk16 stated, *“We adjusted the goal to 10% over 5 years to allow for the compliance testing and supplier readiness,”* illustrating how targets were recalibrated to fit organizational and regulatory realities. Spk15 added, *“Ultimately, the effect was twofold. We had to refine our strategy to be more realistic, and we had to communicate more clearly about what we could control versus but depend on external parties,”* reinforcing that normalization involved managing expectations. These executives revealed that sustainability became more embedded when leaders framed it as an incremental, achievable journey rather than a disruptive overhaul.

**RQ3 Theme 2 – Subtheme 3: Risk-Taking and Experimentation Culture.** Executives emphasized that building a culture of risk-taking and experimentation was crucial for integrating sustainability practices. Spk10 explained, *“Values like pride in craftsmanship, commitment to safety, and a history of process improvement have been strong enablers... on the other hand, norms of risk aversion slow adoption of new technologies... a focus on short-term production targets can sometimes overshadow long-term sustainability goals,”* revealing how risk aversion limited innovation. Spk12 noted, *“A strong quality culture has helped... the norms of continuous improvements also aligns with incremental environmental gains... on the other hand, a risk-averse mindset can slow things down,”* showing the cultural tension between improvement and caution. Spk13 added, *“One value that helps in our pride in quality and efficiency... on the flip side of risk-averse nature, can slow down... another challenge is the production first mentality, when deadlines are tight, sustainability projects can get pushed to the back burner,”* highlighting how performance pressures constrained experimentation. In contrast, Spk17 reflected, *“We invested in targeted pilot projects, such as switching one of our production lines and trailing recycled material in non-critical pump components, so before scaling,”* illustrating how experimentation through pilots allowed innovation without risking operations. Spk15 emphasized, *“The underlying culture of efficiency and collaboration ultimately supports our efforts,”* pointing to a cultural foundation that enabled leaders to take calculated risks. These perspectives demonstrate that, while risk aversion was deeply ingrained, leaders who framed experimentation as structured, collaborative, and efficiency-driven were able to shift the culture toward sustainable innovation gradually.

### **RQ3 Theme 3: Employee Empowerment and Buy-in**

Executives emphasized that sustainability could not succeed without actively empowering employees and securing their buy-in. Spk15 explained, *“To change that mindset, we launched a series of workshops and training modules that explain the the why behind these efforts, things like how reducing scrap not only benefits the environment, but also lowers costs and improves efficiency,”* highlighting the importance of education in shaping employee engagement. Spk16 noted, *“Employee communication and training played a significant role in the building a momentum for sustainability... we also introduced a sustainability spotlight in our monthly all-hands meeting, where team could share success or lessons learned,”* showing how recognition fostered ownership. Spk17 shared, *“Employee communication and training played a central role in overcoming both activisms and operational barriers... workshops demonstrated how reducing scrub material, or optimizing machine energy use, lowered both cost and environment impact,”* reinforcing that connecting sustainability to daily work was critical. Spk9 reflected, *“the Clear communications, training, and small early wins have helped shifted the perception,”* indicating that small victories built trust among employees. Similarly, Spk14 stated, *“We held workshops to explain why sustainability matters, not just as a trend, but as essential to the longevity of our business,”* emphasizing the role of structured rituals in embedding values. Together, these accounts reveal that employee empowerment was achieved not through mandates but by linking sustainability to practical outcomes, celebrating contributions, and ensuring staff felt ownership in the journey. From these narratives, three subthemes emerged: (1) training and education programs to build awareness, (2) encouraging grassroots initiatives and employee-led projects, and (3) incentives and recognition systems that reward sustainable practices.

***RQ3 Theme 3 – Subtheme 1: Training and Education Programs to Build Awareness.***

Leaders consistently stressed that creating awareness through training was foundational to

employee empowerment. Spk1 noted, *“Once people understand, they have the engagement, and you know that drives what I would call innovation inside a company,”* showing how awareness cultivated ownership. Spk9 reflected, *“Clear communications, training, and the small early wins have helped shifted the perception,”* emphasizing that educational efforts changed attitudes toward sustainability. Spk17 explained, *“Employee communication and training played a central role in overcoming both activisms and operational barriers... workshops demonstrated how reducing scrub material, or optimizing machine energy use, lowered both cost and environment impact,”* illustrating how training connected sustainability to daily tasks. Spk12 observed, *“The norms of continuous improvements also aligns with incremental environmental gains,”* suggesting that training built awareness by linking sustainability to existing practices of improvement. These participants reveal that consistent communication and training not only built awareness but also helped normalize sustainability as part of the organizational mindset.

***RQ Theme 3 – Subtheme 2: Encouraging Grassroots Initiatives and Employee-Led Projects.*** Executives highlighted that meaningful progress often emerged when employees themselves initiated sustainability ideas and projects. Spk15 explained, *“Employees could share suggestions or flag inefficiencies, and some of the best ideas for reducing water usage or recycling materials came from the shop floor,”* showing how frontline input shaped effective change. Spk17 shared, *“Communication... highlighted progress and, recognized individually are teams who contribute, innovative ideas,”* demonstrating how employees were encouraged to drive initiatives. Spk16 noted, *“At the operator level, we’ll launch the recognized program for a team that proposed an innovative sustainability solution,”* emphasizing how employee-led ideas were formally acknowledged. Spk9 reflected, *“Clear communications, training, and the small early wins have helped shifted the perception,”* illustrating how incremental initiatives taken up

by employees helped build trust and momentum. Together, these leaders demonstrate that grassroots initiatives not only generate practical solutions but also foster a sense of ownership, transforming sustainability from a top-down mandate into a shared mission.

***RQ3 Theme 3 – Subtheme 3: Incentives and Recognition Systems that Reward***

***Sustainable Practices.*** Executives emphasized that incentives and recognition were crucial tools for reinforcing sustainable behavior across the workforce. Spk15 stated, *“We also introduced small incentives, like re-recognition awards for teams that successfully reduced waste or energy use,”* showing how recognition created motivation at the team level. Spk17 added, *“Incentives were, modest. But effective, such as including sustainability contributions in a performance review, and, rewarding cost-saving eco initiatives with, bonuses or, recommissions,”* highlighting how sustainability achievements were tied directly to evaluation and rewards. Similarly, Spk16 explained, *“More examples were tied part of our performance bonds or managed, achieve waste reduction and energy-saving target,”* demonstrating how incentives were linked to measurable operational goals. These leaders revealed that even modest recognition systems carried weight in embedding sustainability, as they signaled that sustainable practices were valued, measurable, and rewarded at the organizational level.

**Comparison of Results to the Literature Review**

The results showed that firms addressed challenges primarily through supplier diversification, material innovation, and collaborative development with suppliers. These findings are consistent with the Triple Bottom Line (TBL) framework, as leaders balance economic goals, such as reducing risk and cost, with environmental goals, including lowering emissions and improving efficiency, and social goals, including maintaining reliable partnerships (Feng et al., 2023; Saygili et al., 2023; Srivastava, 2024). They also align with Stakeholder

Theory, which emphasizes the need to balance the interests of stakeholders, including suppliers, customers, and regulators, in the decision-making process (Cha & Park, 2023; Fritz & Ruel, 2024). Literature in Chapter 2 similarly highlighted that resilient supply chains are achieved through diversification, proactive engagement, and incremental implementation (Ahsan & Khawaja, 2024; Okiri et al., 2024; Srivastava, 2024). Therefore, the findings validated prior research, showing that adaptation and collaboration are not only pragmatic responses but also consistent with theoretical expectations of sustainable and stakeholder-driven supply chain practices.

Findings indicated that strategic flexibility, incremental goal setting, pilot testing, and budget alignment were central to translating sustainability commitments into practice (Renolds, 2024). This reflects Transformational Leadership Theory, where leaders motivate employees by articulating a clear vision and demonstrating commitment through resource allocation (Dagestani et al., 2024; Ren et al., 2024). It also resonates with Stakeholder Theory, as leaders sought to balance financial concerns with sustainability expectations from customers, employees, and regulators (Perez et al., 2023; Siems & Seuring, 2021). Furthermore, the focus on aligning budgets and performance indicators reinforced the TBL framework, ensuring that economic viability remained in tandem with environmental and social considerations (Aytac et al., 2023; Kuzior et al., 2023). Chapter 2 noted similar dynamics, where effective leadership required reconciling long-term sustainability with short-term pressures (Tritto et al., 2024). The results were therefore consistent with existing scholarship in demonstrating that leadership effectiveness in SSCM depends on their ability to integrate sustainability into organizational strategy without undermining financial stability.

The study revealed that employee empowerment, training programs, grassroots initiatives, and recognition systems were critical cultural factors. These findings strongly support Transformational Leadership Theory, which stresses empowerment, motivation, and inspiring employees toward a shared vision (Ren et al., 2024; Tang et al., 2022). They also align with Stakeholder Theory, as employees are internal stakeholders whose engagement is crucial for the success of sustainability initiatives (Iyere & Misopoulos, 2022; Yang et al., 2024). At the same time, the TBL framework is evident in how recognition systems tied employee contributions to broader social and environmental outcomes, not just economic efficiency (Ahmad & Karadas, 2021; Fritz & Ruel, 2024). The literature in Chapter 2 similarly emphasized the role of organizational culture, learning, and employee engagement as prerequisites for long-term sustainable change (Atiku et al., 2024; Leena et al., 2024; Xin et al., 2024). The results were therefore consistent with theory, confirming that culture is not a peripheral factor but a central enabler in embedding sustainability practices.

Across all three research questions, the study's findings were closely aligned with the Transformational Leadership Theory, Stakeholder Theory, and the Triple Bottom Line framework, which together underpinned the research. The emphasis on adaptation, flexibility, and empowerment confirmed that SSCM adoption in mid-sized firms reflects both theoretical expectations and empirical patterns documented in prior literature. The findings extended existing scholarship by adding depth to how theoretical expectations of leadership, stakeholder engagement, and triple bottom line outcomes were translated into everyday practices. By focusing on mid-sized U.S. manufacturing firms, an often underrepresented sector in SSCM research. The study bridged theory and practice, illustrating how abstract concepts of

sustainability were embedded into operational strategies, cultural routines, and leadership decision-making.

### **Summary**

This chapter presents the study's findings, structured around the three research questions. The analysis revealed how mid-sized manufacturing firms navigated the complexities of adopting sustainable supply chain practices, the leadership actions that translated sustainability commitments into tangible strategies, and the organizational norms that shaped the success of these efforts. Participant perspectives provided direct insight into how sustainability became part of everyday decision-making, supplier relationships, and workplace culture. Themes and subthemes illustrated the interplay between leadership engagement, operational practices, and cultural alignment, offering a comprehensive view of how sustainability was embedded at multiple levels. These findings establish a strong basis for connecting the results with the literature and theoretical frameworks outlined in Chapter 2. The next chapter extends this discussion by examining how the results align with existing research and by exploring their broader implications for leadership, practice, and future research.

## Chapter 5: Discussion, Recommendations, and Study Summary

The problem addressed in this study is the lack of senior leadership engagement in implementing sustainable supply chain management (SSCM) practices within mid-sized manufacturing firms (MSMFs) in the United States (Asuah et al., 2024; Jum'a et al., 2022; Naureen et al., 2023). The purpose of this qualitative multiple-case study is to examine how senior leadership in MSMFs in the United States can address the lack of engagement in implementing SSCM practices by overcoming related challenges and adopting strategies that enhance sustainability initiatives (Abbas, 2024; Goncalves et al., 2024). A qualitative multiple-case approach was employed to investigate how leaders navigated adoption barriers, translated sustainability commitments into measurable strategies, and shaped cultural conditions that supported institutionalization (Halkias & Newbert, 2020; Hassan & Mohamed, 2024; Siems et al., 2023). Purposeful sampling identified senior executives and functional heads with direct SSCM decision authority in MSMFs that were engaged in, or had recently undertaken, SSCM initiatives (Bouncken et al., 2025). Eligibility requires a senior leadership role with responsibility for supply chain or enterprise sustainability decisions within a mid-sized manufacturing context. The study consisted of 17 one-to-one, semi-structured interviews conducted via Zoom, and audio/video sessions were recorded with informed consent under secure data-management protocols. Verbatim transcripts were produced and then analyzed in NVivo 15, which facilitated systematic coding, memoing, and cross-case comparison to surface replicable leadership mechanisms (Thomas & Sohn, 2023; Wittman & Brown, 2022). The resulting sample reflected heterogeneity in subsector, regional footprint, and supply-based structure, which enabled comparative analyses across varied operational constraints and maturity levels (Grynshyna et al., 2023). The overarching goal of this research was to explore how senior leaders in mid-sized

manufacturing firms understand, support, and implement sustainable supply chain management practices in order to generate insights to inform future leadership strategies and sustainability initiatives. Recruiting senior leaders from diverse manufacturing subsectors and regions through professional networks and direct outreach, the study captured a broad spectrum of perspectives on SSCM implementation, contributing to a more comprehensive understanding of how executive engagement drives long-term sustainability and supply chain performance.

The thematic analysis followed Braun and Clarke's six-phase guide, combining inductive coding with deductive mapping to the study's theoretical framework (Maguire & Delahunt, 2017). The results were consistent with prior research indicating that SSCM enhanced resource efficiency, operational resilience, regulatory alignment, and reputational value in mid-sized firms (Srivastava et al., 2024; Tritto et al., 2024; Yang et al., 2024). Highlighted in the findings were essential leadership mechanisms, including governance architectures, clear decision rights, the integration of sustainability KPIs into enterprise scorecards, budgetary alignment, and supplier co-innovation routines supported by digital enablement, such as ERP (Enterprise Resource Planning) / MES (Manufacturing Execution System) add-ons, as well as emissions-tracking tools (Abbas, 2024; Siems et al., 2023). These patterns were grounded in established principles of leadership and sustainability, including transformational influence, stakeholder orientation, and triple-bottom-line logics (Elkington, 1997; Iyere & Misopoulos, 2022; Ren et al., 2024). Firms embedded SSCM into core operations to streamline material flows, reduce waste and energy use, and strengthen delivery reliability alongside quality outcomes. The evidence also revealed a maturation trajectory from pilot projects and "low-hanging-fruit" initiatives in early phases to integrated targets, supplier standards, and continuous-improvement rituals within three to five years (Lloyd et al., 2024; Tate et al., 2023). Across cases, leaders demonstrated organizational

ambidexterity by balancing process discipline with green experimentation through staged investments and iterative learning loops. The patterns showed how executive engagement translated sustainability commitments into measurable performance gains while institutionalizing norms that sustained SSCM over time.

While the study generated valuable insights into how MSMF leaders influence SSCM, several limitations shaped the scope of interpretation. First, the study employed a qualitative multiple-case design, which provided depth but limited generalizability beyond the specific firms studied (Huo et al., 2021). The sample was restricted to U.S.-based mid-sized manufacturing firms, meaning the findings may not fully capture practices in large corporations, small enterprises, or firms operating in different cultural or regulatory environments. Second, data collected primarily through interviews, which rely on participant self-report and may reflect subjective perspectives, memory biases, or socially desirable responses (Allsop et al., 2022). Although this study did not employ multiple data sources for triangulation, credibility was strengthened through member checking; yet, reliance on interview accounts alone remains a limitation (McLeod, 2024). Third, time constraints and resource limitations restricted the number of cases examined, which may mean that some variations across industries or regions were not represented (Kakkar et al., 2023). These limitations do not undermine the value of the findings. However, they should be acknowledged as factors that frame the study's scope and provide opportunities for future research to test and extend the results.

This chapter begins with a discussion of the major findings, organized by the research questions and themes, followed by an examination of the factors that influenced the interpretation of the results and their alignment with the literature and theoretical frameworks

presented in Chapter 2. It then outlines the implications of the study for research, practice, and society, offers recommendations for practice and future research, and concludes with a study summary that presents the overall contribution and take-home message of the dissertation

### **Discussion: RQ1**

The discussion of RQ1 centers on how mid-sized manufacturing firms embedded sustainability into their supply chain practices through three interrelated themes: supply chain adaptation, strategic flexibility, and organizational collaboration. Leaders view sustainability as an ongoing, organization-wide process shaped by external pressures, internal constraints, and relational dynamics with suppliers and employees, rather than as a discrete project (Cha & Park, 2023; Osei et al., 2023). The findings illustrate that MSMFs did not pursue sustainability through radical transformation but instead through deliberate, stepwise strategies that balanced resilience, innovation, and resource limitations. This approach highlights how adaptation, flexibility, and collaboration function as mutually reinforcing governance mechanisms, enabling firms to integrate sustainability into everyday decision-making while maintaining operational viability (Agbenyegah & Kumadey, 2024).

#### ***RQ1 Theme 1: Supply Chain Adaptation***

The findings show that supply chain adaptation was ongoing across the organization, not just a temporary measure. Leaders framed adaptation as a response to external pressures such as regulations, competition, and customer expectations, while also using those pressures as opportunities to redesign practices. Spk4 emphasized this dual role, stating, “*Regulations, consumer expectation, and competition are powerful decision drivers,*” which highlights how external demands shaped organizational strategies. Adaptation was not limited to compliance but was seen as an opportunity to integrate sustainability into sourcing and operations. Firms pursued

diversification to reduce dependency on single suppliers, experimented with sustainable materials to balance cost and performance, and invested in supplier development to build capacity. These actions positioned adaptation as a proactive governance tool that improved both sustainability and resilience. Overall, supply chain adaptation became a central mechanism through which mid-sized manufacturing firms institutionalized sustainability across their value chains (Korucuk et al., 2024; Okiri et al., 2024).

The results from RQ1, theme 1, subtheme 1, show that supplier diversification was a critical mechanism through which firms adapted their supply chains to embed sustainability. Leaders emphasized that relying on a single supplier created vulnerability, while diversification not only reduced risk but also opened opportunities for more sustainable sourcing. Spk8 highlighted this lesson, noting that a disruption *“became a case study for why supplier diversification is so crucial,”* illustrating how real-world challenges reinforced the need for broadening supplier networks. Diversification also enabled firms to select partners who aligned with environmental and compliance standards, strengthening resilience and legitimacy. Leaders used supplier diversification to support sustainability and manage long-term risks. This demonstrates that adaptation was a relational process, requiring cooperation across a broader network to embed sustainability effectively (Dado et al., 2023; Leena et al., 2024).

The findings from RQ1, theme 1, subtheme 2, reveal that material innovation was a vital dimension of supply chain adaptation, allowing firms to balance sustainability goals with performance and cost requirements. Leaders collaborated closely with suppliers and internal R&D teams to test new inputs that met durability and recyclability standards while remaining economically viable. Spk2 emphasized this proactive stance, stating, *“We also wanted to push to our vendors to make sure that they are following sustainability practices when it comes to our*

*materials,*” which shows how expectations for sustainable practices were built into supplier relationships. Experimenting with alternatives and co-investing in trials allowed firms to reduce risks and ensure that sustainability efforts were technically and operationally feasible. Material innovation thus reflects how adaptation extended beyond sourcing decisions into the design and testing of inputs, embedding sustainability into the very foundations (Destiny et al., 2024; Li et al., 2023).

The findings from RQ1 theme 1, Subtheme 3, show that supplier development was a crucial element of supply chain adaptation, shifting the focus from transactional oversight to collaborative capacity building. Leaders recognized that sustainability goals could not be achieved in isolation and required direct investment in supplier capabilities. Spk6 explained this commitment, stating, *“Supplier development has become a standard agenda item. And we allocate a budget each year for joining joint projects aimed at emission reduction and material efficiency,”* which illustrates how firms institutionalized supplier support through resources and planning. Through offering technical assistance, sharing expertise, and undertaking joint investments in sustainability projects, firms increased their involvement across the value chain. This strategy led to improved supplier performance and promoted consistency in sustainability practices upstream. Supplier development, therefore, represents how adaptation was embedded through long-term partnerships, creating resilience and reinforcing sustainability as a shared responsibility (Gribnau, 2024; Henrich et al., 2022).

The results support three integrative conclusions about adaptation in MSMFs. First, adaptation is continuous and bidirectional: leaders respond to external demands while simultaneously using those demands to rearchitect internal and interfirm practices. Second, adaptation is most effective when companies collaborate with suppliers to diversify and develop

new materials, rather than acting alone. Third, adaptation is institutionalized through supplier development budgets and technical assistance, which convert sustainability ambitions into repeatable routines. The evidence demonstrates that MSMFs made sustainability actionable by adapting through their supply base, broadening options, co-investing in new materials, and building partner capability, thereby advancing environmental and resilience goals concurrently with operational reliability.

### ***Theme 2: Strategic Flexibility***

The findings reveal that strategic flexibility was indispensable for advancing sustainability in mid-sized manufacturing firms. Leaders prioritized flexibility over large, immediate changes, using it to sequence initiatives, control costs, and adapt to internal and external pressures (Ugural et al., 2024). This approach allowed firms to sustain momentum without overwhelming resources or disrupting operations. Spk9 captured this reality, noting, *“But supplier delay and higher than expected cost. Push the... that timeline closer to 5-year. We also had to adjust our KPIs,”* which shows how flexibility enabled recalibration in response to constraints. Flexibility was also evident in the use of pilot testing, where firms experimented with processes and materials before scaling them across operations. Leaders further integrated financial planning into their strategies, setting aside innovation budgets and leveraging co-investment models with partners to support sustainable initiatives. These practices demonstrate that strategic flexibility provided a governance framework that balanced ambition with realism, ensuring sustainability was advanced through gradual, adaptive, and financially grounded decision-making (Burchart & Przytula, 2024; Miller, 2022).

The findings from RQ2 theme 2, subtheme 1, indicate that incremental goal setting was a deliberate strategy leaders used to balance ambition with feasibility in embedding sustainability

(Martin et al., 2022). Instead of rushing into quick changes, firms took smaller, manageable steps that matched their resources and operational realities. This gradual approach helped build credibility with employees and reduced resistance by making progress more visible and achievable. Spk16 reflected on this process, noting, *“We had to recalibrate the timelines and accept a more incremental progression,”* which underscores how leaders adapted expectations to ensure long-term stability. Incrementalism was therefore not an avoidance of change but a structured cultural and governance tool, enabling sustainability to be introduced without overwhelming the organization. Leaders developed methods for incorporating sustainability throughout the value chain through establishing progress with phased milestones (Khatun, 2024; Shekarian et al., 2022).

The findings from RQ1 theme 2, subtheme 2, reveal that pilot testing served as a structured way to explore sustainability practices while minimizing risk. Leaders recognized that large-scale implementation without evidence could disrupt operations, so controlled trials were used to validate feasibility and performance (Aytac et al., 2023). These pilots provided reassurance to employees and stakeholders that sustainability initiatives would not compromise quality or reliability. Spk4 explained this approach, recalling, *“We co-invested in testing composable material, conducting joint R&D to ensure shelf life, produce, integrity were maintained,”* which demonstrates how pilot testing balanced innovation with caution. Embedding experimentation into decision-making processes helps firms create a disciplined pathway for scaling sustainability initiatives. Pilot testing thus became a governance mechanism that combined credibility, risk management, and gradual adoption (Tang et al., 2022; Tritto et al., 2024).

RQ2 theme 2, subtheme 3, findings indicate that financial alignment was a decisive factor in advancing sustainability initiatives. Leaders acknowledged that sustainable materials and technologies often carried higher upfront costs, which required careful planning to integrate into operations (Huo et al, 2021). Instead of seeing these costs as impossible barriers, executives created budgets and financial plans to handle them. Spk3 emphasized this challenge, stating, *“Replacing conventional material with greener alternatives or upgrading to more efficient production processes often means higher initial cost,”* which underscores the financial pressures firms face. To address this, leaders introduced innovation budgets and pursued cost-sharing arrangements with suppliers and customers to spread the financial burden. Financial alignment thus ensured that sustainability was treated not as an optional expense but as a strategic investment, embedding it into long-term planning and operational decision-making (Vega et al., 2021; Zabukovsek et al., 2023).

The results of RQ1 theme two support three integrative conclusions about flexibility in MSMFs. First, flexibility was structured and intentional, as leaders relied on staged rollouts and recalibrated KPIs to ensure sustainable practices advanced at a manageable pace. Second, flexibility was experimental, with pilot testing institutionalized to reduce risks and provide evidence of success. Third, flexibility was financially grounded, as innovative budgets and co-investment partnerships created space for sustainable experimentation even under cost pressures. These results support the conclusion that MSMFs embedded sustainability through flexible governance structures that strike a balance between ambition and realism, thereby advancing change without undermining organizational viability (Naeem et al., 2023; Ovetoro, 2024).

### ***Theme 3: Organizational Collaboration***

The results indicate that organizational collaboration was a cornerstone of embedding sustainability into supply chain management. Leaders emphasized that sustainability could not be advanced by procurement or executive leadership alone but required cooperation across departments and with external partners (Goncalves et al., 2024). Collaboration created a culture of shared responsibility, ensuring that sustainability was not siloed but integrated into everyday decision-making. Spk8 underscored this reality, stating, *“Implementally sustainable supply chain practices could not be handled by procurement alone,”* which reflects the necessity of multi-level involvement. Internally, collaboration facilitated alignment between departments, helping overcome resistance and balance competing priorities. Externally, it extended to suppliers, where joint initiatives and relationship-building efforts supported the development of capacity for sustainable practices. Organizational collaboration served as both an internal coordinator and an external connector, transforming sustainability into a shared organizational effort not as a standalone project (Block et al., 2024; Shahzad et al., 2024).

RQ1 theme 3, subtheme 1, findings show that cross-functional committees were essential in aligning organizational priorities and legitimizing sustainability goals. These committees served as formal structures that balanced ambition with practicality, ensuring that progress was aligned with regulatory and operational realities (Srivastava, 2024). Including representatives from all departments ensured accountability and prevented sustainability from becoming a single-function task. Spk16 captured this approach, stating, *“We adjusted the goal to 10% over 5 years to allow for the compliance testing and supplier readiness.”* This illustrates how committees structured targets in a way that was achievable while still moving the organization forward. Establishing cross-functional committees, organizations can integrate sustainability into

their systems, shifting it from a separate initiative to an embedded process with defined responsibilities (Fritz & Ruel, 2024; Saygili et al., 2023).

RQ1 theme 3, subtheme 2, findings show that employee training and engagement were indispensable for embedding sustainability into organizational culture. Leaders recognized that sustainability could not succeed if it remained a top-down initiative; instead, it had to be internalized by employees across all levels (Asuah et al., 2024). Training programs and workshops were introduced not just to build technical skills but also to instill a mindset that valued sustainability as integral to long-term organizational survival. Spk15 emphasized this process, stating, *“To change that mindset, we launched a series of workshops and training modules that explain the why behind these efforts.”* This highlights the deliberate attempt to connect employees with the rationale behind sustainability, ensuring it was seen as more than compliance. Framing training around the “why” allowed leaders to foster emotional and cultural buy-in, making employees active participants in advancing sustainable practices. Furthermore, training initiatives helped break down resistance by linking sustainability to operational benefits, such as increased efficiency and longer product life. In doing so, employee engagement transformed sustainability from an abstract corporate goal into a shared organizational mission, deeply embedded in everyday work practices (Henrich et al., 2022; Tang et al., 2022).

RQ1 theme 3, subtheme 3, findings suggest that transparent communication was crucial in integrating sustainability into organizational practices. Leaders emphasized that without clear communication, sustainability could become fragmented, with departments unsure of their roles and responsibilities (Siems et al., 2022). Transparent processes allowed firms to establish accountability while ensuring employees remained engaged and aligned with overall company goals. Spk6 underscored this, stating, *“Using these frameworks help us maintain transparency in*

*the decision-making... It also allows us to benchmark our effort against peers in HVAC manufacturing.*” This demonstrates how communication was not only about internal alignment but also about maintaining credibility through external comparison. Transparent communication of both achievements and obstacles helped organizations foster trust among employees, stakeholders, and supply chain partners. Transparency also created consistency, as everyone could measure their contributions against organizational benchmarks. Transparent communication reinforced collaboration by making sustainability both visible and measurable, ensuring that it became embedded across multiple levels of the organization (Duan et al., 2021; Fritz & Ruel, 2024).

The results of RQ1 theme three underscore that organizational collaboration was indispensable in embedding sustainability into supply chain management. Collaboration functioned as a system that united structural authority, cultural engagement, and transparent communication. Cross-functional committees legitimized sustainability goals and ensured that progress was balanced with operational realities, preventing initiatives from being sidelined. Employee training and engagement fostered cultural alignment, transforming sustainability from a leadership directive into a shared responsibility that was widely embraced by the workforce. Transparent communication reinforced these efforts by clarifying roles, benchmarking progress, and fostering trust both internally and externally. These practices show that collaboration was essential, making sustainability a core part of the organizational mission instead of an isolated effort (Mcleod, 2024; Singh & Mathiyazhagan, 2024).

## **Discussion: RQ2**

The discussion of RQ2 demonstrates that senior leaders in MSMFs translated sustainability commitments into actionable strategies through the interconnected processes of

leadership vision, financial prioritization, and stakeholder alignment. Leadership vision and commitment anchored sustainability as a long-term strategic orientation, embedding it into governance systems and ensuring credibility through accountability and role modeling (Dagestani et al., 2024). Resource allocation and financial prioritization provided the structural support for these commitments, as dedicated budgets, cost-benefit justification, and external partnerships turned ambition into feasible action. Stakeholder influence and external pressures further reinforced these efforts, with regulations, customer expectations, and supplier collaboration shaping both the scope and pace of sustainability adoption. Taken together, the three themes reveal that sustainability in MSMFs was institutionalized not through symbolic statements but through deliberate integration into strategy, finance, and relationships. This interplay of vision, resources, and stakeholder engagement ensured that sustainability advanced as a credible, resilient, and collective organizational practice (Ahmad et al., 2023; Ren et al., 2024).

### ***RQ2 Theme 1: Leadership Vision and Commitment***

The results of RQ2 theme one demonstrate that leadership vision and commitment were fundamental to embedding sustainability within MSMFs. Leaders described sustainability as a long-term approach, rather than a short-term compliance matter, highlighting incremental progress and credibility (Qwusu & Okpoti, 2019). This orientation helped firms strike a balance between ambition and practicality, ensuring that change was steady and sustainable. Leadership vision was further reinforced through accountability mechanisms that translated strategic intent into operational responsibilities. Spk14 captured this perspective, stating, *“We are no longer just complying with the requirements, but using sustainability as a driver for innovation and long-term resilience.”* Framing sustainability as a source of resilience and innovation, leaders ensured

it was woven into organizational strategy and not treated as an external obligation. These findings indicate that leadership vision provided both direction and integration, transforming sustainability from a rhetorical commitment into a core element of organizational governance (Abbas, 2024; Olati et al., 2024).

The findings of RQ2, theme one, subtheme one, show that leaders consistently framed sustainability as a long-term strategic orientation relatively than a short-term project. Viewing sustainability as incremental helped leaders build credibility and set realistic goals within current resources and constraints (Goncalves et al., 2024). This perspective allowed MSMFs to integrate sustainability into their broader vision, emphasizing incremental progress over rapid transformation. Viewing sustainability as a journey also gave leaders the ability to adapt and recalibrate targets as conditions changed, maintaining momentum even in the face of external pressures. Spk12 articulated this orientation, stating, *“These hurdles means we have had to approach sustainability as an incremental, continuous improvement effort, rather than a rapid transformation.”* Such reflections highlight how patience and persistence became key governance mechanisms. The evidence demonstrates that long-term strategic orientation was essential for embedding sustainability into the core values of MSMFs, ensuring continuity, credibility, and alignment across the organization (Elliott, 2021; Rahimi & Khatooni, 2024).

RQ2 theme one, subtheme two findings emphasize that accountability and role modeling were crucial for turning leadership vision into practice. Leaders recognized that sustainability could not remain aspirational; it had to be embedded into measurable systems that ensured follow-through accountability mechanisms created clarity by assigning ownership and linking sustainability goals directly to departmental performance (Feng et al., 2023). Role modeling further reinforced this process, as executives demonstrated their own commitment through

actions and decisions that prioritized sustainability. Spk15 reflected on this dynamic, noting, *“Ultimately, the effect was twofold. We had to refine our strategy to be more realistic, and we had to communicate more clearly about what we could control versus but depend on external parties.”* This underscores how accountability was paired with transparency, ensuring credibility across the organization. Together, accountability structures and role modeling transformed sustainability from a stated priority into a shared responsibility woven into organizational operations (Leena et al., 2024; Nonet et al., 2022).

The findings of RQ2 theme one, subtheme three, demonstrate that sustainability became embedded in MSMFs when it was integrated into governance systems and strategic priorities. Executives recognized that commitments to sustainability would lack legitimacy if they were not translated into performance frameworks, innovation agendas, and long-term planning strategies (Nahak & Ellitan, 2022). Linking sustainability to measurable KPIs allowed executives to track progress and connect it directly to the organization's success. This integration signaled that sustainability was not an external add-on but a driver of competitiveness and resilience. Spk9 described this evolution, noting, *“We also had to adjust our KPIs. Originally, we focused heavily on material percentage, but we shifted to broader impact metrics.”* Such adjustments demonstrate how firms recalibrated their governance structures to align with broader environmental and operational objectives (Eggert & Hartmann, 2022; Kowalski, 2024).

The evidence supports the conclusion that leadership vision and commitment functioned as both symbolic and operational anchors of sustainability in MSMFs (Begum et al., 2022). Leaders made sustainability a lasting part of the organization by setting long-term goals, encouraging accountability, and aligning objectives with sustainable practices. This demonstrates that leadership vision provided the bridge between strategic intent and actionable practices,

making it central to embedding sustainability into supply chain management (Denhere et al., 2023; Jia et al., 2019).

### ***RQ2 Theme 2: Resource Allocation and Financial Prioritization***

The findings of RQ2 theme two indicate that financial prioritization was pivotal in determining how MSMFs translated sustainability commitments into practice (Saygili et al., 2023). Executives acknowledged that while sustainability initiatives carried significant upfront costs, they could not succeed without dedicated resources and structured financial planning. Establishing innovation budgets and allocating funds specifically for sustainability projects signal firms' commitment and create predictability in advancing initiatives. Financial prioritization also required leaders to balance the premium costs of sustainable materials and technologies with long-term benefits such as resilience, efficiency, and customer trust. Spk3 captured this tension, stating, *“Replacing conventional material with greener alternatives or upgrading to more efficient production processes often means higher initial cost.”* This demonstrates how executives weighed the financial burden against long-term strategic gains. Partnerships with suppliers and customers further enabled firms to share costs and mitigate risks, showing that resource allocation was not just internal but relational. Embedding sustainability required firms to treat financial prioritization as a governance mechanism that transformed resource scarcity into opportunities for strategic investment (Feng et al., 2023; Tran et al., 2024).

RQ2 Theme 2, subtheme 1, findings reveal that dedicated budgeting was essential for advancing sustainability in MSMFs. Leaders understood that without financial resources specifically allocated to sustainability projects, initiatives risked being sidelined during periods of competing priorities (Renolds, 2024). When firms allocated dedicated innovation budgets, they systematically incorporated sustainability into their financial planning processes, shifting

from ad hoc expenditures to more structured investments. This created predictability, allowing organizations to experiment with new practices while maintaining credibility with stakeholders. Budgeting also served as a symbolic commitment, demonstrating that sustainability was not an optional add-on but a permanent part of organizational strategy. Spk7 explained this approach, noting, *“We set aside an innovation budget for small-scale trials, whether it was testing a new fiber blend or piloting a waste reduction process.”* Such deliberate resource allocation highlights how firms created room for experimentation and gradual improvement despite financial constraints. The evidence shows that budgeting acted as both a governance tool and a cultural signal, embedding sustainability within organizational priorities (Aytac et al., 2023; Siems & Seuring, 2021).

The findings from RQ2 theme 2, subtheme 2, show that cost-benefit justification was a critical factor in how MSMFs advanced sustainability initiatives under financial constraints (Huo et al., 2021). Executives acknowledged that adopting greener materials and energy-efficient processes often carried higher initial costs, requiring careful justification to secure internal and external support. Executives reframed these expenses as investments that would yield long-term benefits such as operational efficiency, resilience, and enhanced customer trust, avoiding the perspective of barriers. This approach framed sustainability as a strategic asset, not a cost. Spk8 reflected this challenge, stating, *“Another obstacle is the cost factor. Sustainable material often come at premium and convincing both leadership and customer. Still absorb part of the cost can be tricky.”* This underscores the balancing act of managing immediate financial pressures while sustaining momentum for long-term change. Leaders aligned sustainability with the firm's financial priorities and maintained organizational credibility through evaluating costs in terms of strategic returns (Cek & Ercantan, 2023; Hassan et al., 2024).

RQ2 Theme 2, Subtheme 3, findings indicate that external partnerships were indispensable in enabling MSMFs to pursue sustainability despite resource limitations (Altman & Fry, 2024). Recognizing that the financial burden of adopting greener technologies and materials could not be carried by the firm alone, collaboration with suppliers and customers became a critical strategy. These partnerships allowed firms to share risks, pool knowledge, and co-invest in innovative solutions that might otherwise have been unattainable. Extending sustainability efforts across the value chain has enabled organizations to transform financial challenges into opportunities for collective progress. Spk15 emphasized this approach, stating, *“We also leverage partnerships with customers and suppliers, sometimes co-investing in solutions.”* This highlights how collaboration spreads responsibility while strengthening trust and alignment with external stakeholders. The evidence demonstrates that external partnerships acted as both a financial enabler and a relational governance mechanism, embedding sustainability into networks and do not leave it as an isolated organizational initiative (Achal & Vijaya, 2024; Saygili et al., 2023).

The results of RQ2 theme two show that resource allocation and financial prioritization were pivotal in embedding sustainability within MSMFs (Denhere et al., 2023). Dedicated budgeting created institutional commitments, ensuring that sustainability was consistently supported. Cost-benefit justification reframed the premium costs of sustainable materials and technologies as strategic investments, aligning financial realities with long-term organizational value. External partnerships further strengthened this process by spreading risks and pooling resources, allowing firms with limited reserves to pursue ambitious initiatives collaboratively. Together, these practices demonstrate that financial prioritization was not merely about managing scarcity but about designing governance mechanisms that integrated sustainability into the

economic logic of the firm. A combination of budgeting, justification, and partnerships ensured that sustainability advanced with credibility, resilience, and shared responsibility (Ahmad & Karadas, 2021; Valentinov, 2023).

### ***RQ2 Theme 3: Stakeholder Influence and External Pressures***

The findings of RQ2 theme three reveal that external stakeholders and pressures played a decisive role in shaping how MSMFs advanced sustainability within their supply chains (Siems & Seuring, 2021). Leaders emphasized that regulatory requirements, customer expectations, and supplier relationships were not just constraints but critical drivers that legitimized sustainability practices. Regulations provided non-negotiable benchmarks that compelled firms to redesign sourcing and production processes, ensuring alignment with societal and environmental standards. At the same time, customer demands reinforced sustainability as a competitive necessity, pushing organizations to frame sustainable practices as part of their long-term resilience and market advantage. Supplier collaboration added another dimension, highlighting the interdependent nature of sustainability, where improvements depended on joint initiatives and shared investments. Spk4 reflected this interplay, stating, “*Regulations, consumer expectation, and competition are powerful decision drivers.*” This underscores how multiple external forces acted in concert to push sustainability from aspiration to necessity. The evidence demonstrates that MSMFs did not pursue sustainability in isolation but developed it collaboratively with stakeholders, embedding it into their organizational strategy through compliance, customer alignment, and collaborative partnerships (Allsop et al., 2022; Jayashree et al., 2022).

RQ2 theme 3, subtheme 1, findings indicate that regulatory compliance served as a non-negotiable force shaping sustainability practices in MSMFs (Karma et al., 2024). Leaders described how evolving requirements around emissions, material use, and waste management

compelled them to redesign sourcing and production systems to meet external standards. Regulations were viewed not only as obligations but also as legitimizing mechanisms that helped align organizational practices with broader societal expectations. Compliance, therefore, acted as both a constraint and a catalyst, ensuring that sustainability was embedded into operational priorities and was not treated as optional. Executives emphasized that although compliance introduced cost pressures, it also provided credibility and created benchmarks against which firms could measure progress. Spk16 reflected this balance, stating, *“We adjusted the goal to 10% over 5 years to allow for the compliance testing and supplier readiness.”* This illustrates how regulations directly influenced organizational pacing and target-setting. Overall, regulatory compliance anchored sustainability within governance systems, creating a foundation for resilience and accountability (Saygili et al., 2023; Siems et al., 2022).

The results from RQ3, theme 3, subtheme 2, show that customer demands were a powerful influence on how MSMFs advanced sustainability within their supply chains (Fritz & Ruel, 2024). Leaders emphasized that sustainability commitments gained momentum when customers began favoring suppliers who demonstrated environmental responsibility. Market expectations reframed sustainability from being a compliance exercise into a competitive necessity, where reputation and customer trust became directly tied to sustainable practices. This dynamic pushed firms to integrate sustainability into product design, material selection, and operational efficiency to maintain market relevance. Leaders also noted that customers often viewed sustainability as part of long-term resilience, linking it with reliability and innovation. Spk8 highlighted this connection, stating, *“The biggest lesson was that sustainability and resilience go hand in hand.”* This illustrates how customer scrutiny and expectations elevated sustainability from optional to essential. The evidence suggests that customer demands served as

both pressure and opportunity, compelling MSMFs to innovate while strengthening their competitive position (Adebayo et al., 2024; Vuong & Bui, 2023).

The results for RQ2, theme 3, subtheme 3, highlight that supplier collaboration was indispensable for embedding sustainability in MSMFs (Bakalo & Bogale, 2024). Leaders recognized that progress in sustainable practices could not be achieved independently, as suppliers often controlled critical inputs and processes. Through cooperation, firms pooled expertise, coordinated resources, and modified timelines to try out innovative materials and processes. These collaborations not only strengthened supplier capacity but also reinforced mutual trust and resilience across the supply chain. Executives emphasized that engaging suppliers early in projects helped align expectations and minimize risks associated with adoption of sustainability. Spk7 illustrated this practice, noting, *“We now involve supplier earlier, share technical resources when needed, and build in longer lead times to allow the experimentation.”* This reflects how firms moved from transactional oversight to proactive partnership. Overall, supplier collaboration extended sustainability efforts beyond organizational boundaries, embedding it as a shared responsibility across the value chain (Javed et al., 2024; Pereira et al., 2023).

The results of RQ2 theme three demonstrate that stakeholder influence and external pressures were decisive in embedding sustainability within MSMFs. Regulatory compliance served as the baseline, compelling firms to integrate sustainable practices into their sourcing and production processes, while providing legitimacy and accountability (Knauss, 2024). Customers demand elevated sustainability, further making it a competitive necessity, as buyers increasingly expect measurable environmental responsibility alongside product quality and efficiency. Supplier collaboration added another dimension, ensuring that sustainability extended across the

value chain through shared resources, joint experimentation, and capacity-building initiatives (Cui & Wang, 2022). Together, these pressures reveal that sustainability in MSMFs was not pursued in isolation but co-constructed with stakeholders whose expectations shaped both strategy and execution. Aligning compliance, customer expectations, and supplier relationships, firms can institutionalize sustainability as both a governance requirement and a market imperative, reinforcing its role as a collective and enduring organizational commitment.

### **Discussion RQ3**

The discussion of RQ3 highlights that organizational culture was a decisive factor in enabling or constraining senior leadership's engagement with SSCM (El & Iddik, 2021). Culture played an active role in shaping whether sustainability was accepted or resisted, going beyond a passive presence. The findings reveal three major cultural domains: cultural alignment with sustainability values, organizational norms and mindset, and employee empowerment and buy-in. Each of which provided either momentum or friction for leaders. These domains illustrate that leadership engagement cannot be understood in isolation but is fundamentally tied to the cultural environment in which decisions are made (Lizares & Cuvegkeng, 2024; Osei, 2023).

### **RQ3: Theme 1: Cultural Alignment with Sustainability values**

The findings of RQ3 theme one show that cultural alignment with sustainability values was fundamental for embedding sustainability within MSMFs (Vega et al., 2021). Executives emphasized that sustainability could not remain a side initiative; it needed to be interwoven into organizational norms and decision-making processes. When embedding sustainability into culture, firms created legitimacy and consistency, ensuring that practices were not dependent on individual leaders or short-term projects. This alignment fostered a collective sense of purpose, allowing employees to view sustainability as integral to the firm's identity and long-term

survival. It also ensured that sustainability priorities were reinforced through governance structures, resource allocation, and communication systems. Spk6 illustrated this importance, stating, *“Using these frameworks help us maintain transparency in the decision-making...”* This highlights how cultural alignment translates into accountability and credibility. Overall, the evidence demonstrates that cultural alignment provided the foundation for embedding sustainability as an enduring and organization-wide commitment (Nureen et al., 2023; Srivastava et al., 2024).

The findings of RQ3, theme one, subtheme one, show that sustainability gained legitimacy when it was embedded into the core values of the organization, not as a side initiative but as a fundamental principle (Yang et al., 2024). Incorporating sustainability into governance and decision-making processes ensured that it influenced priorities such as resource allocation, supplier management, and performance evaluation. Embedding it at this level also created stability, allowing sustainability efforts to continue regardless of leadership changes or shifting market conditions. This integration transformed sustainability into a guiding principle that shaped organizational culture and everyday practices, reinforcing its importance as a long-term commitment. Spk2 illustrated this point, noting, *“We also wanted to push to our vendors to make sure that they are following sustainability practices when it comes to our materials.”* This shows how sustainability, once embedded in core values, extends beyond the firm to influence partners and the broader supply chain. Embedding sustainability into organizational values created both internal alignment and external legitimacy, making it a central element of the firm’s identity (Dilling et al., 2024; Nguyen & Zuidwijk, 2024).

RQ3 theme one, subtheme two, demonstrates that sustainability is most effective when employees at every level understand and embrace it as part of the organizational mission (Vuong

& Bui, 2023). Cultural alignment required more than top-down directives; it depended on building shared ownership through communication, training, and inclusive engagement. This approach allowed sustainability to move beyond compliance, becoming an integral part of daily decision-making and operations. Creating a shared purpose also reduced resistance, as employees could see the direct connection between sustainability practices and the company's long-term success. Framing sustainability as essential to both organizational and individual roles, leaders built motivation and accountability across the workforce. Spk17 reflected this emphasis, noting, *“Progress is, like, often, in incremental, and, patience is, required.”* This shows how leaders linked sustainability with a collective journey, one requiring persistence and commitment at all levels. Overall, cultivating a shared sense of purpose transformed sustainability from an executive agenda into a lived organizational value (Cooper, 2024; Perez et al., 2023).

The findings of RQ3 theme one, subtheme three, demonstrate that sustainability was strengthened when reinforced through rituals, symbols, and recognition that made values visible in everyday practices (Pizzurno & Cammarano, 2024). Leaders emphasized that while policies and strategies provided structure, it was symbolic reinforcements such as recognition systems, transparency initiatives, and cultural rituals that gave sustainability ongoing relevance. These practices served as reminders that sustainability was not only an organizational goal but also a celebrated achievement. Honoring progress and integrating rituals into the company's routine, firms kept momentum and motivated employees to view sustainability as part of their collective identity. This reinforcement also helped overcome resistance by making sustainability concrete and rewarding participation. Spk8 captured the necessity of collective reinforcement, stating, *“Implementally sustainable supply chain practices could not be handled by procurement alone.”* This underscores how symbolic practices worked alongside collaboration to normalize

sustainability. Rituals, symbols, and recognition ensured that sustainability was not just mandated from above but lived and embraced across the organization (Ren et al., 2024; Yang et al., 2024).

### ***RQ3 Theme 2: Organizational Norms and Mindset***

The findings reveal that organizational norms and collective mindsets have a significant influence on the introduction and maintenance of sustainability practices in mid-sized manufacturing firms (Waqas et al., 2023). Executives noted that cultural habits, routines, and risk preferences influenced the speed and approach of adoption. Firms avoid sweeping changes by adopting incremental strategies that align with established norms, gradually advancing toward sustainability. This theme demonstrates that organizational culture was not merely a background factor but an active determinant of how leadership engagement with sustainability unfolded (Hunt et al., 2021; Menke et al., 2021).

RQ3 theme 2, subtheme one findings reveal that leaders in mid-sized manufacturing firms must carefully navigate the cultural tension between established practices and the drive for innovation (Saygili et al., 2023). Tradition offered stability and familiarity, but it also risked creating inertia that hindered the adoption of sustainability. To address this, executives framed sustainability not as a radical departure but as an extension of long-standing norms of improvement. Spk12 highlighted this connection, stating, *“The norms of continuous improvements also aligns with incremental environmental gains,”* which illustrates how firms leveraged cultural continuity to introduce environmental initiatives without resistance. Leaders integrated sustainability into continuous improvement, making innovation accepted and easing employees’ transition to new practices. This balance enabled organizations to respect existing

traditions while gradually integrating sustainability into their operational and cultural practices (Frey et al., 2023; Cervino & Mendi, 2024).

The RQ2 subtheme's two findings reveal that incrementalism functioned as a cultural strategy for advancing sustainability in a way that minimized resistance and maintained organizational stability (Ahsan & Khawaja, 2024). Leaders emphasized that minor, steady improvements were more likely to be accepted by employees than sweeping changes, particularly in resource-constrained contexts. This gradual approach allowed firms to build credibility over time, demonstrating progress without overwhelming systems or staff. Spk17 explained, "*Rather than broad-sweeping changes, we learned to prioritize incremental steps that build toward long-term outcomes,*" underscoring how slow and steady change aligned with cultural expectations of practicality. Incrementalism also created space for learning, enabling organizations to adapt processes as they advanced. By embedding sustainability into existing routines through measured steps, leaders ensured that cultural buy-in accompanied operational progress, transforming gradual change into a durable pathway for transformation (Xin et al., 2024; Wang & Liu, 2022).

The results from RQ2 subtheme 3 indicate that organizational attitudes toward risk shaped how sustainability initiatives were introduced and scaled. Many firms demonstrated a cautious cultural orientation, preferring to test new processes in controlled environments before implementing them more broadly (Goncalves et al., 2024). This approach helped leaders present innovation as manageable instead of disruptive, lowering employee resistance and protecting operational stability. Spk14 described this method, noting, "*We also ran side-by-side pilot tests on different batches to ensure quality wasn't compromised,*" which illustrates how experimentation was used to balance innovation with reliability. Leaning on risk-averse norms,

leaders transformed caution into a governance mechanism that facilitated gradual sustainability progress with less organizational pushback (Hassan & Mohamed, 2024; Ren et al., 2024).

### ***RQ3 Theme 3: Employee Empowerment and Buy-in***

Sustainability progressed most when employees themselves led practices, not relying solely on leadership (Solomon & Kota, 2024). Leaders recognized that empowerment fostered stronger engagement, as employees who understood the purpose of sustainability were more motivated to take action. Training programs played a crucial role in raising awareness and equipping staff with the knowledge to integrate sustainability into their daily routines. As Spk1 remarked, *“Once people understand, they have the engagement, and you know that drives what I would call innovation inside a company,”* underscoring the link between awareness and initiative. Empowerment also encouraged grassroots innovation, as employees generated practical solutions from their direct experiences on the shop floor. This bottom-up involvement ensured that sustainability became embedded not only in formal strategy but also in everyday practices. Employees' buy-in transformed sustainability from a leadership-driven mandate into a shared responsibility, strengthening the organizational culture and fostering long-term commitment (Atiku et al., 2024; Gbettor et al., 2024).

The results from RQ3 subtheme 1, highlight that training and awareness were central to preparing employees to engage meaningfully in sustainability initiatives (Barakat et al., 2023). Leaders recognized that sustainability could not remain a leadership-only agenda. Employees needed the knowledge and skills to translate goals into practice. Training programs and workshops were designed to explain why sustainability mattered and how it connected to long-term business success. Spk14 explained, *“We held workshops to explain why sustainability matters, not just as a trend, but as essential to the longevity of our business,”* which illustrates

how awareness-building tied sustainability directly to organizational survival. Embedding these learning opportunities into workplace culture, leaders foster a sense of relevance and urgency, enabling employees to approach sustainability with clarity and ownership. Training thus became a bridge between leadership vision and day-to-day execution, ensuring that cultural alignment was supported by informed and motivated staff (Sadri et al., 2024; Sult et al., 2023).

The findings from RQ3, Subtheme 2, reveal that grassroots initiatives provided a critical channel for embedding sustainability into everyday operations (Ren et al., 2024). Employees were encouraged to share their ideas and solutions, which were frequently implemented in practice, not just to follow leadership directives. This bottom-up engagement gave sustainability a sense of authenticity, as frontline workers could identify inefficiencies and opportunities that might not be visible at the executive level. Spk15 described this process, noting, *“Employees could share suggestions or flag inefficiencies, and some of the best ideas for reducing water usage or recycling materials came from the shop floor,”* which demonstrates how cultural ownership was built from within. Leaders empowered employees to drive sustainability, making it an everyday practice rather than just a policy. Grassroots initiatives, therefore, served as both a source of innovation and a cultural reinforcement, making sustainability an integral part of the organizational DNA (Iyere & Misopoulos, 2022; Tang et al., 2022).

The results from RQ3 Subtheme 3 indicate that incentives and recognition played a pivotal role in reinforcing employee engagement with sustainability (Brun et al., 2020). Leaders understood that while training and grassroots initiatives built awareness and participation, ongoing motivation required visible acknowledgment of employee contributions. Recognition programs and performance-linked incentives signaled that sustainability outcomes were valued alongside traditional measures such as efficiency and cost savings. Spk7 explained this clearly,

stating, *“Goals are set at the company level, and then broken down into department-specific targets with clear ownership... This transparency helps every employee understand not just the company direction, but their personal role in achieving it.”* Linking sustainability goals to accountability and recognition helps firms validate employees’ efforts and encourages continued progress.. This approach embedded sustainability into the reward systems and cultural fabric of the organization, ensuring it was treated as a shared achievement along with leadership directives (Altman & Fry, 2024; Esan et al., 2024).

### **Factors Influencing the Interpretation of Results**

The interpretation of this study’s findings must be considered in light of several factors that may have shaped how results were understood and framed. First, the study’s reliance on qualitative interviews as the primary source of data means that interpretations are influenced by participants’ perspectives, language, and self-reported experiences (Stratton, 2024). While rich and contextually grounded, interview data can reflect selective memory, social desirability bias, or strategic framing by leaders who may wish to portray their organizations in a positive light (Herchline, 2024). For example, executives often emphasized proactive sustainability actions, but these claims may not fully capture the inconsistencies or trade-offs that occur in practice.

Second, the researcher’s position and background may have influenced interpretation. As in any qualitative study, the lens through which the researcher engages with participants, codes transcripts, and develops themes inevitably shapes the meaning-making process (Allsop et al., 2022). The researcher’s prior knowledge of sustainability and leadership may have heightened sensitivity to specific patterns such as governance structures, cultural values, and leadership engagement, while giving less attention to other organizational dynamics that participants may have considered implicit or self-evident (Grazel, 2025). To mitigate this influence, reflexive

memoing and triangulation across participants were employed, yet the interpretation cannot be entirely divorced from the researcher's subjectivity.

Third, organizational and contextual variation across mid-sized manufacturing firms likely shaped the way results were understood (Howard, 2021). While the study included leaders from diverse firms, industry-specific pressures, regional regulations, and supply chain structures differed, which may have influenced how participants described sustainability practices. For instance, leaders in highly regulated industries may have emphasized compliance-driven adaptation, while others in competitive consumer markets may have stressed innovation and branding (Setyaningsih et al., 2024). These differences may limit the degree to which findings can be generalized beyond the sample, though they also enrich interpretation by highlighting the multifaceted nature of sustainability in manufacturing.

Fourth, the timing of data collection may have shaped participants' responses and, consequently, the interpretation of results (Kakkar et al., 2023). Global supply chain disruptions, shifting consumer expectations, and evolving regulatory landscapes were highly salient during the study period (Nobanee et al., 2021). As such, participants may have foregrounded adaptive and flexible strategies in response to these immediate pressures, which could exaggerate their importance relative to more stable, long-term practices.

Finally, the interpretation of results was shaped by methodological boundaries. The use of thematic coding in NVivo facilitated systematic analysis, but coding decisions inevitably involve judgment about what constitutes a theme or subtheme (Ahmed, 2025). Alternative coding strategies might have produced different emphases or categorizations, and the same data could support additional interpretations not prioritized in this study. Furthermore, while the study sought to capture diverse perspectives by interviewing multiple senior leaders, the voices of

frontline employees and external stakeholders, such as suppliers, were indirect, being filtered through executive accounts (Perez et al., 2023). This reliance on leadership perspectives may privilege strategic-level interpretations while underrepresenting the complexities of operational-level issues.

### **Results in the Context of the Study Problem, Purpose, and Literature**

The purpose of this study was to examine how senior leaders in MSMFs in the United States influence SSCM practices. The problem identified in Chapter 1 emphasized that while sustainability has become a global priority, MSMFs face significant challenges due to limited resources, smaller operational scale, and less formalized governance systems compared to large multinational corporations (Goncalves et al., 2024; Sajjad et al., 2023). The results of this study address that problem by showing that MSMFs embed sustainability not through sweeping transformation, but through incremental adaptation, strategic flexibility, and organizational collaboration. These findings highlight that sustainability in MSMFs is achieved through governance mechanisms that balance ambition with resource constraints, ensuring continuity and resilience within the supply chain.

In relation to the study's purpose, the findings demonstrate that leadership played a central role in embedding sustainability at both strategic and cultural levels. Leaders initiated adaptation by diversifying suppliers and co-developing sustainable materials, exercised flexibility by sequencing initiatives and recalibrating goals, and fostered collaboration by engaging employees and suppliers in shared responsibility. This advances the purpose by illustrating that leadership influence in MSMFs extends beyond policy or compliance; it functions as an enabler of cultural change, organizational learning, and long-term commitment to sustainability.

The results also contribute directly to the literature reviewed in Chapter 2. For example, Elkington's (1997) Triple Bottom Line (TBL) framework emphasizes the balance of economic, social, and environmental performance. The findings of this study demonstrate how MSMFs operationalize that balance through small-scale trials, innovation budgets, and supplier development programs, illustrating the practical enactment of TBL under resource-constrained conditions. Similarly, Freeman's (1984) stakeholder theory is supported by the study's evidence that MSMF leaders engaged employees, customers, and suppliers in co-creating sustainable practices. This study shows that stakeholder engagement was not rhetorical but institutionalized through communication, training, and cross-functional committees, extending Freeman's framework into the operational realities of MSMFs.

The findings also align with transformational leadership theory (Burns, 1978; Bass, 1990), which emphasizes inspiring and motivating followers to embrace change by reframing challenges as opportunities and cultivating a shared vision. Leaders in this study demonstrated transformational behaviors by reframing sustainability as both a compliance requirement and an innovation opportunity, encouraging employees to internalize sustainability as a long-term mission. The evidence that executives motivate employees through recognition, workshops, and training reflects the transformational leaders' ability to align individual values with the organizational purpose. This confirms that MSMFs advance sustainability by relying on leaders who motivate and empower rather than merely direct.

In addition, sustainable leadership theory was reflected in leaders' efforts to embed long-term orientation, resilience, and cultural reinforcement into their strategies (Ishaya et al., 2024). Practices such as embedding sustainability into governance structures, recognizing contributions, and institutionalizing rituals demonstrated how sustainable leadership principles are adapted to

MSMFs. Finally, Schein's (2017) organizational culture model was reinforced in the results, showing that sustainability becomes most effective when embedded in core values, rituals, and a shared purpose (Akpa et al., 2021). Leaders deliberately cultivated cultural alignment through transparent communication and symbolic reinforcement, making sustainability an integral part of the organizational identity.

### ***Consistence with Existing Research and Theory and Explanations for Divergent Results***

The findings of this study largely align with existing research and theoretical frameworks. They support the TBL by showing that MSMFs prioritize balance through gradual initiatives rather than large-scale transformation (Kuzior et al., 2023). They affirm stakeholder theory by demonstrating that sustainability outcomes were shaped through ongoing collaboration with employees, suppliers, and customers (Srivastava et al., 2024). They also resonate with transformational and sustainable leadership theories, showing that leaders inspired commitment while maintaining long-term orientation, even in the face of resource pressures (Abbas, 2024). Finally, they confirm organizational culture theory by highlighting the role of values and rituals in embedding sustainability into everyday operations (Akpa et al., 2021).

At the same time, some results diverge from expectations. While transformational leadership often emphasizes radical innovation, MSMF leaders relied more on incrementalism and pragmatism, a strategy shaped by financial and operational constraints (Ren et al., 2024). Similarly, sustainable leadership theory's long-term resilience focus was occasionally compromised when short-term cost pressures delayed or scaled back sustainability initiatives (Koliby et al., 2024). An additional unexpected finding was the prominence of symbolic practices such as recognition and rituals in embedding sustainability. Although organizational culture theory acknowledges the importance of symbols, prior research has underemphasized

their operational impact (Akpa et al, 2021). In MSMFs, these symbolic reinforcements carried significant influence, likely because smaller firms rely more heavily on visible cues and cultural signals to drive employee buy-in than on formalized systems.

### ***Implications and Consequences to Society***

The findings of this study carry significant implications for society, particularly regarding the advancement of sustainability in supply chains managed by MSMFs. A positive implication is that even firms with limited resources can make meaningful contributions to societal goals, such as reducing environmental degradation, conserving resources, and enhancing community well-being (Aytac et al., 2023). By adopting incremental but consistent strategies such as supplier development, diversification, and employee engagement, MSMFs demonstrate that systemic sustainability outcomes are achievable without requiring the large-scale transformations typical of multinational corporations (Renolds, 2024). This contributes to broader societal outcomes aligned with the United Nations Sustainable Development Goals (SDGs), particularly those related to responsible production and climate action.

Another important implication is the cultural shift promoted by leaders who embed sustainability into organizational values (Lizares et al., 2024). When employees internalize sustainability as part of their daily work, societal outcomes extend beyond compliance into genuine behavioral change. This cultural reinforcement creates ripple effects in communities, as employees carry sustainability awareness into their households and local environments (Eliza 2024). Moreover, by modeling sustainable practices, MSMFs can influence supply chain partners, customers, and competitors, thus amplifying societal benefits through network effects (Sarpong, 2023).

At the same time, the study highlights certain limitations and potential negative consequences. Incrementalism, while pragmatic, may slow the pace of change relative to urgent environmental challenges (Atiku et al., 2024). If firms prioritize financial stability over sustainability during economic downturns, progress could stall, undermining long-term societal outcomes. Similarly, symbolic practices such as recognition rituals, while effective within organizations, may create the risk of “performative sustainability” if not paired with measurable outcomes (Sun & Xi, 2024). This could lead to skepticism among external stakeholders and diminish societal trust.

### ***Meaning of the Results in Relation to Previous Research, Theory, and Practice***

The results of this study make an important contribution by bridging prior theoretical perspectives with the practical realities of MSMFs. Previous research often focused on sustainability in large multinational corporations, emphasizing radical transformation, advanced technologies, and substantial resource commitments as drivers of SSCM (Goncalves et al., 2024). By contrast, the findings of this study demonstrate that MSMFs, despite facing resource constraints, address sustainability through incremental, adaptive, and collaborative strategies. This confirms and extends prior research by showing that smaller-scale organizations can achieve sustainability outcomes through governance mechanisms tailored to their contexts, thereby filling a gap in the literature regarding the role of MSMFs.

From a theoretical perspective, the results affirm and extend several frameworks reviewed in Chapter 2. Elkington’s (1997) TBL framework is validated in showing how MSMFs balance financial survival with environmental and social commitments, albeit through pragmatic and incremental initiatives. Freeman’s (1984) stakeholder theory is reinforced by the study’s evidence that sustainability in MSMFs emerges from engaging employees, suppliers, and

customers as co-creators rather than passive recipients of leadership directives. The results also align with transformational leadership theory (Burns, 1978; Bass, 1990), illustrating how leaders inspire employees by framing sustainability as both a compliance requirement and a driver of innovation. However, the study also nuances this theory by showing that transformational practices were often tempered by pragmatic incrementalism rather than radical change, a divergence explained by the structural limitations of MSMFs. Sustainable leadership theory (Koliby et al., 2024) is further supported, as leaders in MSMFs emphasized long-term orientation, resilience, and cultural reinforcement, demonstrating how sustainability was institutionalized through rituals, recognition, and governance structures. Finally, Schein's (2017) organizational culture model is validated in demonstrating that sustainability is most effectively embedded when integrated into values, rituals, and shared purposes (Akpa et al., 2021).

From a practical standpoint, the findings demonstrate that leadership is not only central to SSCM but also serves as a catalyst for cultural alignment and employee buy-in. The evidence that leaders engaged employees through training, transparent communication, and recognition suggests that MSMFs can embed sustainability even without the scale or capital of larger firms (Gbettor et al., 2024). This challenges the assumption that sustainability is primarily a large-firm phenomenon, providing practical guidance for MSMF leaders: incremental approaches, cultural reinforcement, and collaborative networks can be effective vehicles for advancing sustainability (Srivastava, 2024; Kumar et al., 2024).

The study addressed the research problem directly by illustrating how MSMFs, despite resource limitations and structural constraints, can integrate sustainability into supply chain management. The problem statement highlighted the uncertainty surrounding whether MSMFs could make meaningful contributions to sustainability, given their size and limitations (Asuah et

al., 2024; Jum'a et al., 2022; Naureen et al., 2023). The findings address this concern by demonstrating that MSMFs not only contribute but do so through distinctive mechanisms, namely, adaptation, flexibility, collaboration, and cultural alignment, that are both effective and replicable. Thus, the study fulfills its purpose by advancing understanding of leadership's role in embedding sustainability in MSMFs and contributes to both theory and practice by extending existing frameworks into a previously underexplored organizational context.

### **Recommendations for Practice**

The findings of this study offer several practical recommendations for senior leaders in MSMFs seeking to embed SSCM. First, MSMF leaders should adopt incremental and adaptive approaches to sustainability. The results demonstrated that sustainability was most effective when pursued as a continuous process, rather than a one-time initiative, with leaders recalibrating timelines and piloting projects before scaling them up. This aligns with Elkington's (1997) TBL framework, which emphasizes balancing environmental, social, and economic objectives in a manner that suits an organization's capacity. By embedding sustainability through smaller-scale, manageable steps, firms can reduce resistance and ensure continuity, even under resource constraints.

Second, firms should strengthen stakeholder engagement as an operational strategy. Findings showed that MSMFs advanced sustainability by collaborating with suppliers, training employees, and incorporating customer expectations into planning. This reflects Freeman's (1984) stakeholder theory, which highlights the importance of co-creating value with diverse actors. Practically, this means leaders should establish formal mechanisms such as supplier development programs, employee workshops, and transparent communication channels that

transform stakeholder involvement into routine governance practices. These measures can enhance trust and resilience across the supply chain while reinforcing sustainability goals. Third, leaders should leverage transformational leadership behaviors to build organizational commitment to sustainability. The study revealed that leaders who framed sustainability as both a compliance requirement and an innovation opportunity inspired employees to internalize sustainability as an integral part of their professional identity. This reflects Burns's (1978) and Bass's (1990) transformational leadership theory, which emphasizes motivating followers through a shared vision and purpose. In practice, leaders should consistently articulate the long-term value of sustainability, recognize contributions, and model commitment through accountability systems. Such actions foster a culture where sustainability is embraced rather than imposed.

Fourth, MSMFs should institutionalize sustainable leadership practices by embedding sustainability into governance structures and long-term planning. Findings revealed that leaders who integrated sustainability into performance metrics, resource allocation, and board-level oversight were more effective in sustaining momentum. This aligns with Avery and Bergsteiner's (2011) sustainable leadership theory, which stresses continuity, resilience, and cultural reinforcement. For practitioners, this means allocating dedicated budgets for sustainability initiatives, integrating sustainability goals into strategic planning, and recognizing achievements to reinforce cultural alignment.

Finally, leaders should prioritize organizational culture as a vehicle for sustainability. The study highlighted that sustainability became most effective when integrated into core values, rituals, and recognition systems. This finding supports Schein's (2017) organizational culture model, which emphasizes that culture shapes how strategies are enacted (Akpa et al., 2021).

Leaders can act on this by embedding sustainability into onboarding processes, reinforcing values through symbols and rituals, and maintaining transparent communication to align daily operations with sustainability commitments.

These recommendations are deliberately framed within the constraints of MSMFs and should not be overstated. While the findings show that MSMFs can advance sustainability, they also indicate that progress is likely to be incremental and shaped by financial and cultural limitations. Nonetheless, by aligning practice with theoretical frameworks such as the TBL, stakeholder theory, transformational and sustainable leadership, and organizational culture models, MSMFs can meaningfully contribute to societal sustainability outcomes while maintaining operational viability.

### **Recommendations for Future Research**

The findings and implications of this study provide several opportunities for future research that can extend knowledge on sustainable leadership and SSCM in MSMFs. This study demonstrated that leadership practices such as adaptation, strategic flexibility, and organizational collaboration enable MSMFs to integrate sustainability into their supply chains. However, the results also highlight areas where further research is needed to refine theoretical understanding and address practical limitations.

One recommendation for future research is to expand the scope of industries and contexts studied. This dissertation focused specifically on MSMFs in the United States, which limits generalizability to other sectors or regions. Researchers could build upon this work by conducting comparative studies across industries such as technology, agriculture, or service-oriented firms, as well as across international contexts. Such comparative research would help

determine whether the incremental, adaptive strategies observed here are unique to MSMFs in manufacturing or represent broader organizational patterns.

Future research should also explore sustainability at multiple levels of leadership. This study focused on senior executives, including CEOs, COOs, and supply chain directors; however, mid-level managers and frontline supervisors may also play critical roles in embedding sustainability. Examining leadership influence across levels would provide a more nuanced view of how sustainability cascades throughout organizations, potentially confirming or extending transformational and sustainable leadership theories in practice.

Another recommendation is for researchers to incorporate longitudinal designs to capture the evolution of sustainability practices over time. This study provided a cross-sectional view of leadership practices, but sustainability is inherently long-term, requiring continuous adaptation. A longitudinal approach would allow researchers to observe how leadership behaviors, cultural alignment, and supply chain practices shift in response to market, regulatory, or technological changes. Such studies could also investigate whether incremental strategies ultimately lead to more transformational outcomes over more extended periods.

Given the methodological limitations of this study, future researchers could also enhance the design by employing mixed methods approaches. While this dissertation employed a qualitative multiple-case study approach, integrating quantitative measures such as sustainability performance metrics, cost-benefit analyses, or employee surveys would strengthen the evidence base and enable broader generalization. Mixed-method approaches could validate whether cultural signals such as rituals and recognition measurably affect organizational performance and sustainability outcomes.

Finally, the next logical step in this line of research is to examine the interaction between organizational culture and external pressures. The study revealed that symbolic reinforcements and rituals played a central role in embedding sustainability within the organization, while external drivers, such as regulations and customer expectations, served as catalysts for change. Future research could investigate how these internal and external forces interact, whether strong organizational cultures buffer against external pressures, or whether external expectations accelerate cultural alignment with sustainability. Understanding this interaction would deepen theoretical insights into organizational culture and stakeholder theory while offering practical guidance for leaders navigating competing demands.

### **Study Summary**

This study examined how senior leaders in MSMFs in the United States influence SSCM practices. The problem addressed was that MSMFs, despite their critical role in the U.S. economy, often lack the resources, scale, and governance structures of larger firms, creating challenges in embedding sustainability. The purpose of this study was to explore how leadership drives adaptation, flexibility, and collaboration in integrating sustainability into supply chain practices.

A qualitative multiple-case study design was employed. Data were collected through 17 semi-structured interviews with senior leaders and analyzed using thematic analysis with NVivo 15. The analysis revealed three overarching themes: supply chain adaptation, strategic flexibility, and organizational collaboration. These results showed that MSMFs embed sustainability incrementally through diversifying suppliers, testing new practices, and engaging employees and supply chain partners. Limitations included reliance on self-reported interview data, the focus on U.S.-based firms, and a sample size that may not capture all industry variations.

The findings contribute to both theory and practice by confirming that leadership influence extends beyond compliance and policy to shape culture, build resilience, and enable long-term sustainability. The results are consistent with frameworks such as the Triple Bottom Line, stakeholder theory, transformational leadership, sustainable leadership, and organizational culture theory.

### **Take-Home Message**

The overarching message of this study is that sustainability in mid-sized manufacturing firms does not depend on large-scale transformations but on the cumulative impact of incremental adaptation, flexible leadership, and collaborative engagement. When leaders embed sustainability into culture and strategy, even resource-constrained organizations can achieve resilience and long-term value creation. The findings underscore that the path to sustainable supply chains is not defined by the size of the firm but by the commitment of its leaders to integrate sustainability into everyday practices.

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**Appendix A**  
**List of Abbreviations**

<b>Abbreviation</b>	<b>Full Form</b>	<b>Definition</b>
CDC	Carbon Disclosure Project	An initiative tracking corporate carbon emissions and sustainability reporting.
CEO	Chief Executive Officer	The highest-ranking executive responsible for overall company strategy and direction.
COO	Chief Operating Officer	An executive responsible for managing day-to-day business operations.
CSR	Corporate Social Responsibility	A business approach that contributes to sustainable development by delivering economic, social, and environmental benefits.
ESG	Environmental, Social, and Governance	A set of criteria for measuring a company's impact on sustainability and ethical business practices.
GSCM	Green Supply Chain Management	An approach to supply chain management that integrates environmental considerations into procurement, production, and distribution.
ILO	International Labor Organization	An international organization advocating for labor rights and social justice.
ISO	International Organization for Standardization	An independent organization that develops standards to ensure quality, safety, and efficiency.

LCA	Life Cycle Assessment	A technique to assess environmental impacts associated with all stages of a product's life cycle.
MCS	Multiple Case Study	A research approach analyzing multiple cases within a real-life context.
MSMFs	Mid-Sized Manufacturing Firms	Manufacturing firms with 100 to 999 employees or annual revenues between \$10 million and \$1 billion.
NVivo	Qualitative Analysis Software	A software tool used for analyzing qualitative research data.
SL	Sustainable Leadership	A leadership approach that integrates long-term social, environmental, and economic sustainability into organizational decision-making.
SSCM	Sustainable Supply Chain Management	A strategic approach integrating environmental, social, and ethical considerations into supply chain operations.
ST	Stakeholder Theory	A theory that emphasizes the importance of engaging all stakeholders in business operations to achieve long-term success.
TBL	Triple Bottom Line	A framework evaluating business performance across three dimensions: financial, social, and environmental sustainability.

TL	Transformational Leadership	A leadership style that focuses on inspiring and motivating employees to achieve long-term business goals and innovation.
UNSDG	United Nations Sustainable Development Goals	A set of 17 global goals designed to address social, economic, and environmental challenges.
WEF	World Economic Forum	A global institution analyzing economic and sustainability issues.

## Appendix B

### Key Findings and Research Gaps in Sustainable Supply Chain Leadership

Theoretical Framework	Key Finding	Research Gap
Transformational Leadership (TL)	Firms with highly engaged transformational leaders are 45% more likely to integrate sustainability initiatives (PWC, 2024).	Existing research focuses on large and small corporations. MSMFs remain underexplored in TL-driven SSCM adoption (Feng et al., 2023).
Stakeholder Theory (ST)	Firms with active stakeholder engagement strategies improve SSCM adoption by 30% (Feng et al., 2023; Xin et al., 2024).	Studies focus on large organizations with established sustainability policies. MSMFs face supplier misalignment and weaker regulatory influence (Saygili et al., 2023; Srivastava, 2024).
Triple Bottom Line (TBL)	Companies embedding TBL in SSCM outperform competitors by 30% in sustainability metrics (Nogueira et al., 2025).	TBL studies mainly analyze large firms with dedicated sustainability departments. MSMFs struggle with leadership-driven TBL

		adoption (Feng et al., 2023, Huo et al., 2021).
Sustainable Leadership (SL)	Sustainability-focused leadership increases operational efficiency by 20-30% and boosts brand trust (Xin et al., 2024).	SL studies focus on broad corporate sustainability. MSMFs' unique financial constraints and leadership limitations are less examined (PWC, 2024; Setyaningsih et al., 2024; Sachs et al., 2024).
Sustainable Supply Chain Management (SCCM)	SSCM adoption reduces supply chain costs by up to 16% and improves resilience (McKinsey & Co., 2023).	Existing SSCM studies emphasize global corporations. MSMFs require tailored sustainability strategies due to limited resources (Siems et al., 2023; Hunt et al., 2021).

## **Appendix C**

### **Participant Safeguards and Data Security Protocol**

This study will be approved by the Institutional Review Board (IRB) at National University, San Diego, CA, USA, to ensure compliance with ethical standards for research involving human participants.

#### **Voluntary Participation**

Participation in this study is entirely voluntary. Participants may decline to answer any question or withdraw from the study at any time without penalty or consequence.

#### **Informed Consent**

Each participant will be provided with an informed consent form outlining the purpose of the study, procedures, risks, benefits, confidentiality measures, and their rights. Only those who sign and return the form will be interviewed.

#### **Confidentiality and De-Identification**

All interview responses will be kept strictly confidential. To protect participant identities:

- Real names and company identifiers will be replaced with pseudonyms.
- Any potentially identifying information will be removed during transcription and analysis.

#### **Data Storage and Security**

All collected data, including recordings, transcripts, and notes, will be stored in a secure, encrypted, and password-protected folder accessible only to the researcher.

### **Data Retention and Destruction**

In accordance with institutional and ethical guidelines, data will be retained for three (3) years following the completion of the study. After this period, all digital files will be permanently deleted.

### **Member Checking**

Participants will be able to review and verify the accuracy of their interview transcripts. They may suggest corrections or clarifications before the data is included in the final analysis.

## Appendix D

### Interview Question Protocol

Introduction	<p>Good morning/afternoon. My name is Satpreet Singh, and I am a doctoral candidate at National University. I am conducting a qualitative research study to explore how senior leadership in mid-sized manufacturing firms (MSMFs) in the United States adopts and implements Sustainable Supply Chain Management (SSCM) practices. This interview is designed to capture your experiences, decision-making approaches, and perspectives as a senior leader involved in sustainability initiatives. Your insights will contribute to a better understanding of leadership practices that drive successful SSCM adoption. The interview will take approximately 45–60 minutes, and you may skip any question you are not comfortable answering. May we begin?</p>
RQ1	How do mid-sized manufacturing firms overcome challenges related to the adoption of SSCM practices?
IQ1	Can you describe some of the challenges or obstacles your organization has faced in implementing sustainable supply chain practices?
<p><b>Follow-up prompts (if needed)</b></p> <ol style="list-style-type: none"> <li>1. Would you say these challenges mainly were internal (e.g., operational, cultural) or external (e.g., regulatory, supplier-related)?</li> <li>2. How did these challenges affect your overall sustainability goals?</li> </ol>	

3. What kind of feedback or pressure did you receive from stakeholders?	
IQ2	Thinking about those challenges, what actions did you take as a leader to address or overcome them?
<b>Follo-up prompts (if needed)</b>	
4. Did you engage other leaders or cross-functional teams in the process?	
5. What role did employee communication, training, or incentives play in overcoming obstacles?	
6. Were there any changes in sourcing, logistics, or supplier relationships?	
IQ3	Can you walk me through a specific example where your organization successfully tackled an SSCM-related challenge?
<b>Follow-up prompts (if needed)</b>	
7. What factors do you believe contributed most to that success?	
8. What did you and your organization learn from that experience?	
9. How has your approach to sustainability challenges shaped forward?	
RQ2	What factors influence senior leadership's ability to translate sustainability commitments into actionable strategies in mid-sized manufacturing firms?
IQ4	Many organizations express sustainability commitments, but how have you ensured those commitments are translated into concrete strategies and actions?
<b>Follow-up prompts (if needed)</b>	
10. Who is typically involved in turning these goals into operations?	

<p>11. Do you align your strategies with any frameworks such as the Sustainable Development Goals (SDGs), ESG (Environmental, Social, and Governance), or Triple Bottom Line (TBL)?</p> <p>12. What is the most challenging part of moving from commitment to action?</p>	
IQ5	What tools, processes, or systems does your organization use to track progress toward your SSCM goals?
<p><b>Follow-up prompts (if needed)</b></p> <p>13. Are your metrics tied to environmental, social, and/or economic outcomes?</p> <p>14. Do you rely on internal tools (e.g., dashboards, performance reviews) or external validations (e.g., audits, certifications)?</p> <p>15. How frequently is progress reviewed and communicated?</p>	
IQ6	What are the most significant internal or external influences, positive or negative, that affect your ability to act on your organization's sustainability goals?
<p><b>Follow-up prompts (if needed)</b></p> <p>16. How do factors such as regulation, consumer expectations, or competition affect your decisions?</p> <p>17. How does your organizational culture shape your sustainability efforts?</p> <p>18. Do you feel you have the necessary resources (staff, time, budget) to support these initiatives?</p>	

RQ3	What organizational culture factors support or hinder the engagement of senior leadership in SSCM practices?
IQ7	How would you describe your company's overall culture regarding sustainability and innovation?
<p><b>Follow-up prompts (if needed)</b></p> <p>19. Is sustainability part of your mission or day-to-day operations?</p> <p>20. Are employees encouraged or rewarded for sustainable behavior?</p> <p>21. Would you describe sustainability as a strategic focus or more of an obligation?</p>	
IQ8	How does collaboration, both within your leadership team and across departments, impact the implementation of SSCM initiatives?
<p><b>Follow-up prompts (if needed)</b></p> <p>22. Are sustainability goals clearly communicated across departments?</p> <p>23. What makes collaboration effective or difficult across supply chain, operations, and sustainability teams?</p> <p>24. How do you foster alignment between different teams or functions?</p>	
IQ9	In your experience, what values, norms, or behaviors within your organization have helped or made it harder to advance sustainability efforts?
<p><b>Follow-up prompts (if needed)</b></p> <p>25. Are there any unspoken habits or beliefs that conflict with sustainability goals?</p> <p>26. How do leadership values influence sustainability practices in your firm?</p>	

27. How have you addressed any resistance to change?	
Transition	We are now reaching the end of the interview. Do you have any additional thoughts or experiences related to leadership and sustainable supply chain management that you would like to share?
Conclusion	<p>That brings us to the end of the interview.</p> <p>I truly appreciate that you took the time to share your experiences and insights. Your input is incredibly valuable and will help deepen the understanding of leadership practices in sustainable supply chain management.</p> <p>A transcript of this interview will be prepared and sent to you for your review. You will have the opportunity to verify the accuracy of your responses and make any clarifications if needed. I kindly ask that you return the reviewed transcript within three business days. All information you have shared will remain confidential, and the data will be securely stored and destroyed after three years.</p> <p>Thank you again for your participation. I wish you all the best in your continued leadership efforts and sustainability initiatives.</p>

## Appendix E

### Recruitment Email

Subject: Invitation to Participate in a Doctoral Study on Sustainable Leadership and SSCM

Hello!

My name is Satpreet Singh, and I am a doctoral student at National University. I am conducting a research study to explore how senior leaders implement Sustainable Supply Chain Management (SSCM) practices in mid-sized manufacturing firms (MSMFs) in the United States.

I am currently recruiting individuals who meet all of the following criteria:

1. Serving in senior leadership roles such as CEO, COO, or Supply Chain Director within MSMFs.
2. A minimum of two years of direct involvement in SSCM implementation.
3. Active participation in sustainability-related decision-making within their organization.
4. Willingness and availability to participate in a 45-minute or longer virtual interview session via Microsoft Teams or Zoom.

If you decide to participate in this study, you will be asked to complete the following activities:

1. Participate in one session of a one-on-one virtual interview via Microsoft Teams or Zoom, which will be audio and video recorded for transcription purposes.
2. Review the interview transcript via email for approximately 10–15 minutes to ensure your feedback was accurately captured.

3. You are welcome to forward this invitation to professional colleagues who may meet the study criteria and be interested in participating.

During the interview, you will be asked questions related to:

- Your leadership role and experience with SSCM strategies.
- Challenges and barriers you have encountered in implementing sustainability initiatives.
- Organizational culture and internal dynamics that influence SSCM efforts.
- How leadership strategies are used to turn sustainability commitments into action.

If you are interested in participating in this research, please contact me directly at

[s.singh1367@o365.ncu.edu](mailto:s.singh1367@o365.ncu.edu)

Thank you for considering this opportunity to contribute to academic research and the advancement of sustainable practices in the manufacturing sector.

Warm regards,

Satpreet Singh

## Appendix F

### Social Media Recruitment Message

Participants Wanted: Research Study on Sustainable Leadership & Sustainability Practices in U.S. Manufacturing Firms

I am a doctoral candidate at National University conducting a study on how senior leaders in mid-sized manufacturing firms implement Sustainable Supply Chain Management (SSCM) practices.

I am currently seeking participants who meet the following criteria:

- Senior leadership role (e.g., CEO, COO, or Supply Chain Director)
- Employed at a U.S.-based mid-sized manufacturing firm (100–999 employees)
- At least 2 years of experience in SSCM implementation
- Actively involved in sustainability-related decisions

Format: One 45–60 minute virtual interview via Zoom or Microsoft Teams

If you are interested or want more details, please DM me or contact me at

s.singh1367@o365.ncu.edu

Please feel free to share this with others in your network who may qualify. Your insights could make a meaningful contribution to academic research and sustainable business practices!

Thank you for considering this opportunity!

## Appendix G

### Consent Form

My name is Satpreet Singh, and I am a doctoral student at National University (NU), San Diego, CA, USA.

I am conducting a research study to understand how senior leadership in mid-sized manufacturing firms in the United States adopt and implement Sustainable Supply Chain Management (SSCM) practices. The name of this research is “Sustainable Leadership and Supply Chain Management in the Manufacturing Sector: A Multiple-Case Study of Senior Leadership in Mid-Sized Manufacturing Firms in the USA.”

You are invited to participate in this study if you meet all the following criteria:

1. Serving in a senior leadership role such as CEO, COO, or Supply Chain Director within a U.S.-based mid-sized manufacturing firm (100–999 employees)
2. A minimum of two years of direct involvement in SSCM implementation
3. Active participation in sustainability-related decision-making within your organization
4. Willingness and availability to participate in a 45-minute or longer virtual interview session via Microsoft Teams or Zoom

I hope to include approximately 15 to 20 participants in this study.

Kindly review this form thoroughly, and feel free to ask any questions before deciding to participate in the study.

**What You Will Be Asked to Do:** If you agree to participate in this research study, you will be asked to complete the following:

1. Participate in a one-on-one virtual interview via Microsoft Teams or Zoom (approximately 45–60 minutes), which will be recorded.
2. Review your transcribed interview via email (10–15 minutes) to ensure the accuracy of your responses (member checking).
3. Provide two or three professional referrals who meet the criteria above and may be interested in participating.

During the interview, you will be asked about:

- Your role and experience with SSCM strategies
- Challenges or barriers encountered in SSCM implementation
- Leadership practices and organizational culture influencing SSCM adoption
- Ways in which sustainability commitments are turned into actionable strategies

**Risks:** There are minimal foreseeable risks associated with participating in this research. You may skip any question you do not wish to answer or withdraw from the study at any time without penalty.

**Benefits:** There are no direct benefits to you for participating in this study. However, your insights may contribute to future research and improve the understanding of sustainable leadership practices in the manufacturing industry.

**Recording:** With your permission, the interview will be audio/video recorded using Zoom or Microsoft Teams. You may disable video at any time.

**Confidentiality:** All information collected during this study will be treated with strict confidentiality. Reasonable and appropriate steps will be taken to ensure the security and privacy of your personal data. No identifying details will appear in any publications or reports resulting from this research. All data will be securely stored on a password-protected, encrypted external hard drive for a period of three (3) years. After this retention period, all electronic files will be permanently deleted, and any physical documents will be securely destroyed.

**Voluntary Participation:** Participation in this study is entirely voluntary. You are free to withdraw from this research study at any time without any consequences. You may also skip any questions you do not wish to answer.

**Questions:** Please feel free to ask any questions now or at any point in the study. If you have questions later, you may contact me at [s.singh1367@o365.ncu.edu](mailto:s.singh1367@o365.ncu.edu)

If you have concerns about your rights as a participant, you may contact the Institutional Review Board (IRB) at National University via email at [irb@nu.edu](mailto:irb@nu.edu)

## Appendix H: Pre-Screening Questionnaire

Title: Pre-Screening Questionnaire for Study Eligibility

Instructions: Please answer the following questions to determine your eligibility to participate in the study titled “Sustainable Leadership and Supply Chain Management in the Manufacturing Sector: A Multiple-Case Study.”

Are you 18 years of age or older?

Yes

No

What is your current job title?

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Are you currently employed in a mid-sized manufacturing firm (100–999 employees)?

Yes

No

Do you serve in a senior leadership role (e.g., CEO, COO, Director, or equivalent)?

Yes

No

Do you have at least two years of experience in implementing or overseeing sustainable supply chain management (SSCM) practices?

Yes

No

Are you directly involved in sustainability-related decision-making within your organization?

Yes

No

Please provide your preferred method of contact for scheduling an interview (email or phone).

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