Exploring Factors Behind the Delay in Adopting Sustainable Supply Chain Management Practices in Firms [Quality Management]

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I hereby certify that all the material in this thesis, which is not my own work, has been appropriately identified and acknowledged. Furthermore, I confirm that no portion of this thesis has been previously submitted or approved for the award of a degree by this or any other university.

DEDICATION

I dedicate this thesis to the loving memory of my sister, Lina Mattar, who passed away in July 2021. Words cannot express the depth of the void left by her absence, and her passing has profoundly impacted my life and academic journey. She was not only my sister but also my best friend, confidante, and source of constant inspiration. Her unwavering belief in my abilities and her relentless support have been an integral part of my pursuit of knowledge and academic achievements.

This thesis stands as a tribute to her indomitable spirit, resilience, and unwavering support throughout my educational and personal endeavours. Her memory will forever be etched in my heart.

May her soul rest in eternal peace.

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Abstract

The purpose of this thesis is to comprehensively explore the adoption of sustainable supply chain management (SSCM) practices and the factors that influence the timing of such adoption in firms. This research employs a rigorous approach involving a thorough literature review and empirical case studies. The study's findings emphasise the critical significance of key factors influencing firms' decisions regarding SSCM practices.

Significantly, this research highlights the paramount role of awareness and knowledge enhancement within firms. A lack of information and understanding acts as a substantial barrier to SSCM adoption, emphasising the need for educational and training programs to equip employees with the essential skills and knowledge for sustainable practices. Collaborative efforts with supply chain partners and suppliers emerge as a valuable strategy for promoting sustainability and innovation within the supply chain. The study also underscores the importance of rigorous financial considerations, including cost-benefit analyses, in informed decision-making and resource allocation. Addressing the risks and disruptions associated with unsustainable practices is deemed crucial for building resilient and sustainable supply chains.

This research's originality lies in its comprehensive approach to understanding SSCM adoption by integrating empirical evidence from diverse case studies. It offers industry-specific insights into challenges and opportunities, rooted in real-world contexts, revealing the intricate dynamics that influence the timing, that influence firms' adoption decisions. The study places particular emphasis on the timing of adopting sustainable practices, highlighting how delays and early actions shape outcomes and strategies. By focusing on the role of education and training programs as critical tools for overcoming adoption barriers, the research contributes a unique dimension to the field. Furthermore, this study advances theoretical discourse while providing actionable insights aligned with industry demands.

While these findings constitute a significant contribution to existing knowledge, it is essential to acknowledge certain limitations. These encompass issues related to generalisability, the exploration of alternative strategies, the need to distinguish between small and medium-sized enterprises (SMEs) and larger corporations, and the potential for more in-depth examinations of stakeholder dynamics. Nonetheless, this research lays a robust foundation for insights into the complexities of sustainable practice adoption and offers valuable directions for future research and practical applications.

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ABBREVIATIONS

SP – Sustainable practices

SCM – Supply chain management

SMEs – Small and Medium-Sized Enterprises

SSC – Sustainable supply chain

SSCM – Sustainable supply chain management

NGO – Non-Governmental Organisations

WCED – World Commission on Environment and Development

GSCM – Green Supply Chain Management

TBL – Triple Bottom Line

LEED - Leadership in Energy and Environmental Design

ERA - Entertainment Retailers Association

ESG - Environmental, Governance

BASE- British Association for Supported Employment

Chapter I - Introduction

1.1 Background

The field of supply chain management (SCM) has undergone a profound transformation. The early focus of SCM has centred around operational efficiency and profit maximisation, as illustrated by Forrester's influential work (Forrester, 1958). However, this perspective has significantly evolved in response to a shifting global landscape, characterised by pressing environmental, social, and economic challenges such as climate change, resource scarcity, and human rights concerns. This shift towards embracing a sustainable supply chain by scientific findings related to climate change, limited natural resources and circular economy principles (Hojnik *et al.*, 2023). These factors have prompted companies to re-evaluate their management (SSCM) has prompted substantial academic interest over the last two decades as firms increasingly recognise the importance of balancing profitability with environmental and social responsibility (Winter and Knemeyer, 2013; Ososanmi *et al.*, 2022).

While sustainability as a concept has a diverse number of interpretations within the academic literature, its principles acknowledge the limitation of natural resources and the need to meet society's current needs while accounting for future generations (Brundtland, 1987; Faber, Jorna and Van Engelen, 2005). Recent perspectives have refined this understanding, particularly from an operational perspective defining sustainability as a supply chain that does no net harm to natural or social systems while still producing a profit over an extended period and potentially continuing to do business forever if customers are willing (Pagell and Wu, 2009; Schäfer, 2023).

In recent years, firms have become more aware and responsive towards their social and environmental responsibilities. This shift is influenced by environmental footprint and engages with social considerations and ethical practices (Rivera *et al.*, 2023). Stakeholder demands for ethical practices, and human rights have also played a significant role in driving the adoption of sustainable SC practices (Shrivastava and Guimarães-Costa, 2017; Koberg and Longoni, 2019)

While many firms have pledged to adopt sustainable practices within their operations, others have been delaying the adoption of such practices. As, today's supply chains scale, the scope of their impact and various stakeholders' expectations, leading corporations are believed to be accountable for the environmental and social performance of their suppliers as well (Walker and Jones, 2012). Despite increasing awareness and pledges to adopt sustainable practices, some firms have lagged in their adoption efforts. As supply chains expand in scale and impact, corporations are held accountable not

only for their own environmental and social performance but also for their suppliers. This has been catalysed by the influence of environmentally conscious consumers and regulatory pressures, leading to incorporating them into corporate management practices (Rao and Holt, 2005; Shevchenko, Lévesque and Pagell, 2016; Paulraj, Chen and Blome, 2017a).

The lack of consensus on what it means to be sustainable has prompted the creation of countless certification schemes each providing frameworks to monitor and evaluate their sustainability performance (Klassen and Vereecke, 2012; Gualandris *et al.*, 2015; Martins *et al.*, 2023). Consumers and businesses alike are looking for logos to identify whether a product or a service is sustainable. However, some researchers have critiqued these various certifications arguing that some serve merely to gain social legitimacy rather than fostering true efficiency and impact (Meyer and Rowan, 1977; Lucas, Grimes and Gehman, 2022). Thus, increasing the development of ceremonial behaviour and superficially conforming rather than creating a positive impact on environmental concerns and creating efficiency or impact (Boiral, 2007; Sandhu, 2022). While many firms have yet to embrace any form of sustainable initiative, other firms have indeed adopted sustainable practices. However, some organisations have sought sustainable social and environmental practices, while others lacked genuine commitments and primarily pursued social legitimacy.

Contribution to the academic literature on SSCM has continued to gain momentum, examining various aspects such as drivers, barriers, and performance outcomes. The motivation and delays in adopting sustainable practices (SP) are multifaceted, stemming from a combination of internal and external factors. Internal motivations may include decreasing expenses through greater efficiency, managing risk through diversification of processes and addressing vulnerabilities, and ongoing innovation and collaboration (Gimenez, Sierra and Rodon, 2012; Pagell and Shevchenko, 2014). External drivers originate from pressures exerted by customers, non-governmental organisations (NGOs), and investors (Carter and Liane Easton, 2011). Despite this growth in research, a comprehensive understanding of the intricate motivations and delays behind the adoption of sustainable practices remains a challenge.

In summary, the extensive body of literature and recent research underscores the dynamic and evolving landscape of sustainable supply chain management, reflecting the field's profound transformation and the growing significance of balancing profitability with environmental and social responsibility. The next sections will highlight gaps in the literature and the aims and objectives of this research.

1.2 Research Aim and Objectives

This research is exploratory in nature; it aims to examine the motives and barriers to SSC practices. There is an existing body of literature that examines the drivers and barriers of SSCM. However, there is a notable gap in the research, very few studies focus on the timing of firms' adoption of sustainable practices, and why some firms choose not to participate in sustainability efforts. Therefore, this study specifically aims to explore the reasons firms delay adopting sustainable practices and the factors that influence the timing of the adoption of sustainable practices.

Pagell and Shevchenko (2014) brought light to a significant issue — the failure to account for the integrated impact of sustainable supply chains and the complex trade-offs that underpin radical innovation in this context. Understanding these trade-offs, especially concerning the benefits versus the costs and disruptions associated with sustainability practices, is pivotal for making informed decisions, not only regarding "what" to adopt but also "when" to do so. This timing aspect remains a substantial gap in the comprehension of SSCM.

Montabon Pagell and Wu (2016), further stress that the predominant fixation on profit maximisation within the literature overshadows the crucial social and environmental dimensions of sustainability. Balancing profitability with responsible practices is a delicate act, and exploring the temporal dimensions of this decision-making process is vital. Additionally, Johnsen, Miemczyk and Howard (2017), introduce the Industrial Marketing and Purchasing (IMP) approach, which challenges the traditional lead firm-centric perspective, emphasising the roles of multiple network actors in shaping sustainability practices. This diversification of actors calls for an exploration of the temporal aspects of decision-making in sustainability adoption, beyond the conventional "how" and "why."

Despite the presence of industry-specific models, a universal framework for sustainable supply chain adoption is notably absent. Dubey *et al.* (2017) highlight this gap, underscoring the need for a comprehensive framework and further investigation into the factors influencing sustainability integration. Moreover, the role of peer pressure, a potentially influential driver of sustainable supply chain practices, remains an underexplored territory. Keating et al. (2008) passively mention peer pressure's role, and yet there is a lack of dedicated research that directly investigates how subjective norms, formed under the influence of peer perceptions, impact the "when" of sustainability adoption.

Moreover, in emerging economies, the integration of all three sustainability dimensions – economic, environmental, and social – remains an underrepresented facet. To gain a comprehensive understanding of the temporal dynamics of sustainability adoption, it is imperative to explore the

intricate interplay among these dimensions. Additionally, while digital technologies can significantly enable and influence the timing of sustainable practices, as highlighted by Govindan and Hasanagic (2018), this facet remains insufficiently addressed in the literature.

This study responds to these critical gaps by conducting exploratory research on the timing of sustainable practices adoption within SSCM. It aims to address theoretical disparities, integrate the three dimensions of sustainability, and provide a more comprehensive understanding of SSCM practices' outcomes. Furthermore, this research aligns with previous calls for holistic studies that encompass all dimensions of sustainability, filling the theoretical gap while promoting the development and practical use of theory within SSCM. Given the escalating importance of sustainability in the global business landscape, the study is not just a theoretical exercise but a practical necessity to inform both organisations and policymakers. It is critical for firms to make informed choices regarding "when" and "why" they embrace sustainable practices in their supply chains, and this research endeavours to provide the essential insights to guide those decisions.

The specific objectives of this research are as follows:

- RQ1: What are the underlying reasons for firms' delay in adopting sustainable practices within their supply chain?
- RQ2: What factors influence the timing of the adoption of sustainable supply chain practices?

The specific objectives of this research directly correspond to critical gaps identified in the literature, emphasising the significance of understanding why some firms delay adopting sustainable practices (RQ1) and the factors that motivate firms to adopt sustainable supply chain practices (RQ2). RQ1 corresponds to a prevalent gap in the literature that highlights the necessity of comprehending the underlying reasons for firms' delays in adopting sustainable practices. This gap is rooted in the existing body of literature's limited exploration of why some firms hesitate to adopt sustainability within their supply chains, despite the growing global emphasis on sustainability. There is a clear need for insights into the motivations and barriers that contribute to these delays.

RQ2 aligns with another critical gap that calls for the exploration of the timing that motivates firms to adopt sustainable practices. The literature currently lacks a comprehensive understanding of the factors that prompt firms to make the transition to sustainable supply chain practices, especially when faced with the trade-offs and complexities associated with such a transition. Investigating these factors is essential for shedding light on the temporal dynamics of sustainability adoption in supply chains. The

study examines a set of propositions that aim to investigate the underlying factors influencing firms' sustainability decisions.

The first research objective aims to explore and empirically substantiate the factors that act as barriers to the adoption of sustainable practices within firms. Through qualitative semi-structured explorative interviews with three supply chain firms from diverse countries, this research seeks to gain comprehensive insights into the motives and barriers behind the delayed adoption of sustainable practices, which will be valuable in the context of the identified research gap.

The second objective delves into comprehending the factors that influence the timing of firms' adoption of sustainable practices. By empirically investigating the proposed set of propositions through interviews and data analysis, this objective aims to identify the key factors that either facilitate or hinder the timely adoption of sustainable supply chain practices.

This research endeavours to address these gaps, providing a deeper understanding of the motives and barriers associated with sustainable supply chain practices. The findings will contribute to the existing knowledge in the SSCM field by offering valuable insights into the complexities and temporal dynamics of sustainability adoption in supply chains, and they will provide practical implications for organisations and policymakers striving to promote sustainability within supply chains.

1.3 Methodology:

This research delves into the examination of motives and barriers associated with sustainable supply chain management practices through an inductive qualitative exploratory research approach. Employing a multi-study strategy, the study samples three supply chain firms representing diverse geographical regions, utilising a non-probability sampling method. The primary case study is based in the UK, complemented by two additional case studies from Jordan and Finland. The data collection primarily involves conducting semi-structured interviews with key stakeholders. In addition to interviews, the qualitative analysis extends to encompass both primary and secondary sources, including sustainability reports, websites, and email correspondence. This methodological choice aligns with the pragmatic paradigm, facilitating interaction with stakeholders and allowing for adaptive questioning to gain comprehensive insights into their experiences.

The analysis process combines elements of theoretical propositions and grounded theory. While the study is not exclusively grounded in grounded theory, it incorporates this approach alongside a comprehensive literature review. Grounded theory serves as the method of analysis, enabling the

identification of patterns and codes that emerge from the collected data. This analytical approach closely aligns with the research objective of building on existing theory.

By employing qualitative inductive research, taking into consideration theoretical propositions, and applying grounded theory in the analysis, this study strives to offer a holistic understanding of the motives and barriers associated with sustainable supply chain management practices. The selected research methodology facilitates an in-depth exploration of stakeholder experiences and aids in pinpointing the diverse factors influencing firms' decisions. The presentation of the findings ensures anonymity for each firm, maintaining confidentiality.

The research outcomes hold the potential to make a valuable contribution to the existing body of knowledge in the field, offering meaningful insights for both practitioners and policymakers dedicated to promoting sustainable practices within supply chains. Furthermore, this research aspires to advance a theoretical framework related to the delay in adopting sustainable supply chain practices, paving the way for future empirical testing and scholarly exploration.

1.4 Limitations:

While this research seeks to enhance our understanding of motives and barriers in SSCM practices, it is essential to recognise the inherent limitations of the research design and methodology. Understanding these limitations provides valuable context for interpreting the findings and offers guidance for future research.

Firstly, the adoption of an inductive qualitative exploratory approach through semi-structured interviews, while rich in detail and insights, may introduce researcher interpretation bias. Although efforts are made to mitigate this bias, it remains a potential limitation.

Secondly, the research samples three supply chain focal firms from three different countries. While this approach offers diverse perspectives, the relatively small sample size and specific contexts may limit the generalisability of the findings. Nevertheless, it provides a more holistic understanding of the motivations and timing behind adopting sustainable supply chain practices.

Thirdly, the methodology relies on the experiences of key stakeholders within the sampled supply chains. Despite efforts to diversify participant profiles, their views may not encompass the full spectrum of motives and barriers in this domain. To address this, secondary sources are also incorporated during the analysis to capture a broader range of insights.

Lastly, this research is conducted within a specific timeframe. The dynamic nature of sustainability practices and the external environment may not be entirely captured unless the research extended over a more extended period.

In recognising these limitations, this study seeks to contribute to a more comprehensive understanding of SSCM practices, all while acknowledging the boundaries within which it operates.

1.5 Contributions to Knowledge:

This research makes significant contributions to the existing body of knowledge in Sustainable Supply Chain Management (SSCM) by addressing key research gaps. It delves into the motives behind adopting sustainable practices and explores the reasons for the delay in their adoption. Furthermore, this study recognises the critical need for the development of robust theories that underpin SSCM and aims to contribute to this aspect, promoting not only theoretical advancement but also practical applicability (Reefke and Sundaram, 2017).

One notable contribution lies in the methodological approach chosen – qualitative research. While the social dimension of SSCM is often challenging to quantify, this study seeks to illuminate this aspect by examining how firms respond to various pressures. By doing so, it promises to enrich our understanding of the complexities of SSCM and the intricate interplay of motivations that influence the timing of sustainable practice adoption. In a broader context, this research seeks to foster the evolution of SSCM literature, offering fresh insights and perspectives. Through its qualitative exploration, it ventures into uncharted territory, addressing gaps that quantitative methods often overlook.

By highlighting the motives and barriers to SSCM practices, this research provides a valuable resource for organisations and policymakers aiming to navigate the complexities of sustainable supply chain integration. It aspires to stimulate further inquiry into the temporal dynamics of sustainability adoption and encourages the development of theory in SSCM. Overall, this research enhances the comprehensiveness of our knowledge in the field and emphasises the vital role of timely and informed sustainability decisions for firms, a pivotal aspect in today's global business landscape.

1.6 Thesis Outline:

This thesis follows the widely recognised six-stage structure. It provides a logical progression through the exploration of the sustainable supply chain management research topic. Below is an outline.

Chapter 1: Introduction- The chapter delineated the research objectives and introduced the chosen methodology while also acknowledging the limitations of the study. Furthermore, it previews the anticipated contributions to the existing literature in this domain. This chapter ends with the thesis outline.

Chapter 2: Literature Review- The literature review chapter contains the theoretical foundation of the research. Through a comprehensive review of existing research, theories, and studies. The literature review highlights the stages of progression of research on the topic of supply chain management to sustainable supply chain management. This chapter highlights the gaps and opportunities for academic contribution.

Chapter 3: Methodology- The methodology chapter shares the research aim and questions. Then discusses various philosophical paradigms. The chapter then shares the research design, approach, and justification, followed by an explanation of all the aspects of the methodology and data collection approach used in this research.

Chapter 4: Findings- The findings chapter thematically presents the findings from the data collection. The data shared is a compilation of extracts from the interviews conducted as well as secondary sources.

Chapter 5: Discussion- The discussion chapter provides the analysis and interpretation of the data presented in the findings chapter. The results are discussed in the context of both the analysis and the existing literature. The chapter highlights the results and their significance, as well as any other contributions to literature.

Chapter 6: Conclusion- The conclusion chapter provides a concise summary of the entire research. Providing the research questions, objectives, main findings, and implications of the research. It also briefly shares avenues and opportunities for future research.

Chapter II-Literature Review

2 Introduction

“The literature review is designed to demonstrate the researcher’s knowledge of a particular subject area, field, and discipline” (Grant and Osanloo, 2016, p. 19).

The literature review serves as a crucial exploration of the existing body of knowledge on sustainable supply chain management (SSCM). As per Grant and Osanloo's definition (2016), this chapter is not just an exposition of knowledge but a deliberate journey through the literature of SSCM, designed to demonstrate the researcher's understanding of the subject and gather insights for the research questions introduced in the previous chapter.

This chapter reviews a diverse range of SSCM literature in this chapter. With a focus on what are the drivers, barriers, and motivations behind adopting SSCM practices found in the literature. The chapter also examines how these factors influence the timing of when firms choose to adopt sustainable practices. It covers an informative and targeted review of selected SSCM literature that will help answer the research questions outlined in the Introduction Chapter.

To demonstrate the researcher’s understanding of the literature, the chapter will begin by exploring the evolution of sustainability and the role supply chain management plays. Followed by an exploration of the factors that affect the adoption of environmental, social, and economic sustainable practices within the supply chain. This includes the barriers, drivers, and motives behind adopting SSCM. The chapter will provide an overview of existing SSCM theories, with a focus on the most dominant theories used in SSCM research, before concluding with a chapter summary.

2.1 Sustainability and Supply Chain Management

2.1.1 Overview of the Origin of Sustainable and Supply Chain Management

The origins of sustainable supply chain management (SSCM) can be traced back to the late 1960s when Ayres and Kneese (1969), drew attention to issues related to production waste and increasing consumption. However, the real catalyst for sustainable development occurred in 1987 with the release of the Brundtland Report by the World Commission on Environment and Development (WCED) (Brundtland, 1987). The report underscored the importance of change towards sustainable practices in both industrial processes and consumer behaviour (Dehghanian and Mansour, 2009; Rajeev *et al.*, 2017). The WCED's definition of Sustainable Development (SD) as "development that meets the needs

of the present without compromising the ability of future generations to meet their own needs" set the stage for the integration of sustainability principles into various fields, including supply chain management. While the Brundtland Report marked a pivotal moment, it's important to consider the impact of the socio-political and environmental context that precipitated this paradigm shift. Increasing environmental concerns, international pressures, and evolving consumer expectations all played significant roles in driving the sustainability agenda (Vachon and Klassen, 2008).

During the early 1990s, an upsurge in sustainability-focused operations management research was observed (Rajeev et al., 2017). The research focused on production planning, inventory management, reverse logistics, and the remanufacturing of returned goods (Taticchi, Tonelli and Pasqualino, 2013). Scholars credit the environmental movement and mounting ecological challenges for driving academia and industry to re-evaluate their practice (Seuring and Müller, 2008b). The business case for sustainability also started to gain prominence, with studies highlighting the potential economic benefits of adopting more sustainable supply chain practices (Carter and Rogers, 2008).

By 1999, a more significant emphasis was placed on environmental concerns. Guide Jr, Jayaraman and Srivastava (1999) explored remanufacturing and recycling, while Gungor and Gupta (1999) concentrated on product recovery and environmentally conscious manufacturing. This evolving landscape eventually led to the emergence of 'green' supply chain management initiatives, often as part of Corporate Social Responsibility (CSR) efforts (Carter and Jennings, 2002; Murphy and Poist, 2002). However, these early initiatives, known as Green Supply Chain Management (GSCM), primarily addressed environmental and, to some extent, economic aspects but did not comprehensively integrate the social dimension, resilience, and long-term perspective (Srivastava, 2007; Ahi and Searcy, 2013; Laari *et al.*, 2016; Rajeev *et al.*, 2017).

It was in 1994 that John Elkington introduced the concept of the Triple Bottom Line (TBL), considering all three aspects of sustainability - environmental, social, and economic - within the supply chain (Elkington, 1997). Nevertheless, it's worth considering the debates surrounding the practical implementation and measurement of the TBL in supply chain management. Implementing and measuring social and economic sustainability aspects often posed significant challenges, and the dominance of environmental considerations persisted in many cases (Seuring and Müller, 2008b; Ahi and Searcy, 2013).

In the early 2000s, both practitioners and academics continued to refine and adapt the notions of sustainability and green supply chain management (Govindan and Hasanagic, 2018; Ali and Shoaib,

2023). The 2010s marked a substantial increase in research focusing on the environmental and green aspects of sustainable operations management (Rajeev *et al.*, 2017). Researchers began recognising the pivotal role of SSCM in assisting firms to enhance their sustainability performance, not only within their chains but also in collaboration with suppliers (Ashby, Leat and Hudson-Smith, 2012; Ashby, 2016; Ali and Shoaib, 2023).

As research matured, the SSCM literature evolved into a distinct domain within supply chain management (Shevchenko, Lévesque and Pagell, 2016; Saeed and Kersten, 2019). In 2014, Wolf conducted a study involving over 1600 firms and concluded that SSCM implementation had the potential to enhance a firm's sustainability. Another study confirmed that improved social, environmental, and economic performance was closely tied to the actions of a firm's supply chain (Ni and Sun, 2019). Consequently, SSCM emerged at the crossroads of the Triple Bottom Line and supply chain management aspects (Brandenburg *et al.*, 2014). SSCM was recognised for its capacity to drive company growth, increase efficiency, reduce costs, enhance sustainability, and attract skilled employees (Sajjad, Eweje and Tappin, 2015).

Nevertheless, a critical examination of the implementation challenges, unintended consequences, and areas where SSCM may fall short of achieving holistic sustainability objectives is warranted. As SSCM gained traction, it became essential to address the potential discrepancies between corporate rhetoric and actual practices (Gold, Seuring and Beske, 2010; Lu *et al.*, 2018). The following section will present various definitions of sustainability in the supply chain literature, illustrating the evolution and ongoing development of SSCM.

2.1.2 Definition of SSCM

Ever since the publication of the Brundtland Report, researchers have been disputing the meaning of sustainability within the business context (Morali and Searcy, 2013). Numerous definitions of sustainability can be found in the SCM literature (Sajjad, Eweje and Tappin, 2015). The evolving definitions of SSCM reflect both the progress and the persistent challenges within the field. The initial definitions emphasised economic and environmental aspects revealing the early focus on reducing costs and environmental impact. This limited perspective did not fully embrace the social dimension of sustainability which is increasingly recognised as essential in the SSCM (Badurdeen *et al.*, 2009). This shift from environmental to a more holistic understanding, incorporating social and ethical considerations, reflects the growing recognition of corporate social responsibility (CSR) and stakeholder concerns.

Table 1: Definitions of SSCM found in Literature

Reference	Definition	Differences and Commonalities
(Ali and Shoaib, 2023)	SSCM is the integration of sustainability principles and practices into the supply chain in order to improve environmental, social, and economic performance.	Emphasise voluntary integration; encompass a broader range of supply chain functions
(Pagell and Shevchenko, 2014)	Sustainable supply chain is the design, *coordination,* control, and organisation of a supply chain to make it truly sustainable with the minimum expectation being to achieve *economic* viability while ensuring no harm to the *environment* and *social s*ystems over an extended time.	Sustainability is defined comprehensively. They focus on the design, coordination, and control throughout the supply chain
(Ahi and Searcy, 2013)	Sustainable supply chain management is the voluntary *integration of social, economic, and environmental* considerations with the key inter-organisational business systems to create a *coordinated s*upply chain to effectively manage the material, information and capital flow associated with the procurement, production and distribution of products or services to fulfil the short term and long-term profitability, stakeholder requirements, competitiveness, and resilience of the organisation.	The authors focus on Sustainability being voluntary not forced. Managing information, materials, and capital flow. They take a step further not just design and coordination.
(Miemczyk, Johnsen and Macquet, 2012)	Sustainable purchasing and supply management *consideration of environmental, social*, ethical, and *economic responsibility* in the management of the organisation's external resources in such a way that the supply of all goods, services, capabilities, and knowledge that are necessary for running, maintaining, and managing the organisation's primary and support activities	This definition includes Ethics as a separate. Most sustainability definitions do not include ethical consideration as a separate aspect. It is usually part of the social element.

	providing value not only to the organisation but also to society and the economy.	
(Closs, Speier and Meacham, 2011)	Sustainability of the supply chain is defined as the ability of an organisation to mitigate, detect, respond, and recover from growing global threats related to the supply chain and to enhance long-term value.	These authors use *quality management* aspects in their definition. They are concerned about reducing waste and risks and in long-term value.
(Wolf, 2014)	Supply chain sustainability is defined as the strategic collaboration of a manufacturer with suppliers to deliver maximum value to multiple stakeholders by collaboratively managing inter- and intra-organisation processes, the flow of products and services, information, and capital decisions *to achieve the goal of economic, social, and environmental* sustainability.	The emphasis on attaining the maximum value to the multiple stakeholders is key in their definition.
(Bals and Tate, 2018)	Firms are increasingly under pressure from stakeholders to incorporate the *triple-bottom-line of social, environmental, and economic responsibility* considerations into operations and supply chain management strategies.	Straight forward triple-bottom-line approach, which needs to be embedded in SC management strategies.
(Badurdeen *et al.*, 2009)	Sustainable supply chain management is the planning and management of sourcing, procurement, pre-manufacturing, manufacturing, use and post-use stages in the life cycle in a closed loop, through multiple life cycles to achieve a shared vision, with the sharing information on product life cycle stages between companies *by considering social and environmental* implications.	A continuous loop, with multiple life cycles, that includes pre, while and post usage of products.

(Seuring and Müller, 2008b)	Sustainable supply chain management is defined as *meeting the goals of economic, social, and environmental dimensions* of sustainable development, derived from the requirements of customers and stakeholders through the management of material, *information*, capital flows and cooperation among companies.	Sustainability requirements are a result of consumer and stakeholder requirements.
(Carter and Liane Easton, 2011)	Sustainable supply chain can be defined as the strategic and *transparent integration of organisations' social, environmental, and economic goals* through systematic coordination of inter-organisational business processes for improving the long-term economic performance of the organisation and its supply chain *stakeholders*.	This is one of the few definitions that highlight the importance of 'long-term' improvement in performance. Most agree, but very few included it in their definition.
(Teuscher, Grüninger and Ferdinand, 2006)	Sustainable supply chain management includes total quality management philosophy and handles all internal and external risks associated with *financial, social, and ecological threats* along the supply chain.	This definition includes total *quality management* philosophy.
(Taticchi, Tonelli and Pasqualino, 2013, p. 783)	"...integrating environmental, economic and social concerns into the interorganisational practices of SCM…reduction of negative environmental and social impacts as an imperative; consideration of all the stages across the entire value chain for each product; and a multi-disciplinary perspective, encompassing the entire product life cycle."	Focuses on sustainable development as a whole including product life cycle
(Hassini, Surti and Searcy, 2012)	"…the management of supply chain operations, resources, information, and funds in order to maximise the supply chain profitability while at	Focuses on the holistic aspect of sustainability

	the same time minimising the environmental impacts and maximising the social well-being"	
(Genovese *et al.*, 2017, p. 353)	"…circular economy concept can describe a framework in which businesses operating within the same supply chain and beyond can engage with sustainability activities to create shared value."	Focus circular economy
(Quariguasi Frota Neto *et al.*, 2010, p. 4464)	"…closing supply chains is regarded as environmentally friendly, in case sustainable…"	Focus on closed loop

While the integration of the Triple Bottom Line (TBL) framework has become more prevalent in Sustainable Supply Chain Management (SSCM), effectively balancing the economic, social, and environmental dimensions remains a significant challenge, particularly in the context of global supply chains. This complex issue necessitates further exploration and research, particularly regarding the timing and strategic implementation of sustainable practices within supply chains.

Table (1) is not meant to provide all the various definitions found in the literature. It is meant to illustrate various definitions of sustainability in the context of the supply chain throughout time. As seen in the table some choose to focus on the environmental aspect others incorporate all three dimensions of sustainability. You can see the concept of sustainability and supply chain evolving from green supply chain management (GSCM) (Srivastava, 2007) to sustainable supply chain management (Carter and Rogers, 2008; Seuring and Müller, 2008b), to develop the closed-loop concept of supply chains (Quariguasi Frota Neto *et al.*, 2010). And finally, the concept of circular economy (Genovese *et al.*, 2017).

The more recent definitions of SSCM signal an acknowledgement of the need for a holistic approach. They recognise that SSCM goes beyond cost-saving measures and environmental concerns. It now encompasses the social and ethical aspects, acknowledging the importance of long-term relationships, stakeholder requirements, and societal well-being (Taticchi, Tonelli and Pasqualino, 2013; Khan *et al.*, 2021; Alzubi and Akkerman, 2022). This reflects a more holistic approach to SSCM and becoming

more integrated, which includes a wider set of issues (Seuring and Müller, 2008b; Marshall *et al.*, 2015).

However, the coexistence of numerous definitions highlights a lack of consensus within the field. The evolving nature of SSCM, while reflective of its growth, also raises questions about the fundamental concepts and boundaries. In addition, if the evolution of these definitions has truly helped companies overcome the barriers to adoption or whether it has simply added complexity without offering clear guidance on practical implementation.

This critical reflection is particularly relevant in the context of the research objectives. As firms delay adopting sustainable practices in their supply chains, the complex and evolving definitions of SSCM may contribute to this delay. The uncertainty surrounding the exact scope and requirements of SSCM—due to the lack of a universally accepted definition—likely creates confusion about when and how to implement these practices. As highlighted in existing research, firms may delay adoption because they struggle with balancing the triple bottom line (economic, social, and environmental goals). This lack of a singular, universally accepted definition indicates an ongoing debate and a level of uncertainty in the academic and practical community (Ahi and Searcy, 2013; Touboulic and Walker, 2015).

While the integration of the Triple Bottom Line (TBL) framework has become more prevalent, it's essential to recognise that SSCM still grapples with reconciling these three dimensions effectively in practice. Achieving a balance between economic, social, and environmental objectives remains a complex challenge, particularly in global supply chains. This issue necessitates further exploration and research, not only in defining SSCM but also in the timing, when to implement these principles effectively within supply chains. Therefore, the SSCM definitions is not just a theoretical concern but a practical challenge that influences the timing of adoption, as companies must navigate competing demands and an unclear framework for action.

Achieving a balance between economic, social, and environmental objectives remains a complex challenge, particularly in global supply chains. The timing of implementing SSCM principles is crucial and multifaceted. Early adoption can position companies as leaders in sustainability, potentially yielding long-term benefits and competitive advantages. However, it also involves considerable upfront costs, potential disruptions to established processes, and uncertain returns on investment. Conversely, delaying implementation may allow companies to benefit from the experiences of early

adopters, yet risks lagging behind in regulatory compliance, market expectations, and the potential reputational advantages associated with sustainability.

Companies must carefully evaluate their specific contexts, including industry characteristics, geographical factors, and stakeholder priorities, to determine the most effective timing for integrating sustainable practices. This strategic, informed, and flexible approach is essential to balance the potential benefits and risks associated with early adoption, adapt to changing conditions, and remain vigilant to emerging trends and opportunities in sustainability.

In sum, while the evolving definitions of SSCM reflect progress in incorporating a more holistic approach to sustainability, they also reveal the ongoing complexities and ambiguities in the field (Touboulic and Walker, 2015). This suggests the need for further critical examination and refinement of the theoretical and practical foundations of SSCM, particularly regarding the optimal timing for implementing sustainable practices to advance the field effectively.

2.2 Sustainability Dimensions

The evolution of SSCM practices is an essential factor to consider when comprehending the underlying motives, driving forces, and barriers that underlie the adoption of SSCM. In this section, we examine the SSCM dimensions and practices, delving into its historical development and the interplay of economic, social, and environmental factors that inform these practices.

At the core of SSCM lie the three primary dimensions of sustainability, often captured in the concept of the TBL. Coined by Elkington, the TBL approach integrates economic, social, and environmental considerations. Notably, SSCM literature has been progressively moving towards the TBL approach which includes the people, planet, and profit. According to some researchers, sustainability is the balance between the development of economic, social, and environmental practices, that leads to sustainable growth (Morali and Searcy, 2013). The progression of SSCM practices can be defined across distinct dimensions:

2.2.1 Environmental Dimension of SSCM

This dimension plays an essential role in SSCM practices, particularly driven by the growing concerns about global warming and the evolving landscape of government regulations (Mesmer-Magnus, Viswesvaran and Wiernik, 2012; Sarkis, 2020; Ghosh, Jha and Sharma, 2020). It centres around the organisation's responsibility to uphold environmental sustainability principles throughout the entirety of the supply chain. This includes preserving biodiversity, safeguarding land integrity, and ensuring

the quality of water and air resources. Additionally, it calls for the efficient management of resources while simultaneously fostering innovative solutions to mitigate the depletion of natural resources linked to production activities (Bonn and Fisher, 2011).

2.2.1.1 Compliance vs. Commitment: Beyond Superficial Obligations

One key challenge in SSCM is distinguishing between compliance and genuine commitment. While regulations often set the baseline for environmental responsibility, a commitment to sustainability goes beyond these legal requirements. While regulations often establish the minimum requirements for environmental responsibility, a true commitment to sustainability transcends these legal mandates. For instance, a company dedicated to sustainability may voluntarily implement comprehensive recycling programs throughout its supply chain, even in regions where recycling is not legally required. This environmental dimension goes beyond superficial responsibilities. It necessitates a comprehensive evaluation of resource allocation, product and service offerings, organisational processes, regulatory adherence, and various aspects of the supply chain. Its effectiveness is gauged through a range of indicators, including energy consumption, water quality and usage, solid and hazardous waste generation, and land use (Bremser, 2014, p.1).

2.2.1.2 Evolving with External Factors: Aligning with Environmental Targets

In response to these imperatives, some corporations have initiated substantial transformations within their supply chain practices, aligning them with environmental objectives and evolving governmental regulations (Ghosh, Jha and Sharma, 2020). This underscores the intricate interplay between external factors shaping SSCM and its evolution.

2.2.1.3 Innovation: A Competitive Advantage

However, these insights also raise critical questions about the authenticity of corporate commitments to environmental sustainability versus mere compliance with regulatory mandates and external pressures (Vafaei, Bazrkar and Hajimohammadi, 2019). Consequently, this highlights the pressing necessity for further research to delve into the motivations, depth, and outcomes associated with the environmental dimension within SSCM. This inquiry lays a crucial foundation for addressing our research questions, particularly in deciphering the genuine commitment to environmental sustainability and assessing the efficacy of these practices in mitigating environmental impacts within supply chains.

2.2.1.4 Continued Re-evaluation: Aligning with Environmental Targets

Additionally, it is essential to note that the recent re-evaluation of supply chain strategies by certain corporations, aligning them with stringent environmental targets and adapting to evolving governmental regulations (Sharma et al., 2022), emphasises the intricate interplay between external influences on SSCM and its ongoing development.

2.2.2 Social Dimension of SSCM

The Social Dimension of SSCM is concerned with the "practices, stakeholders, capabilities, and resources to address human potential and welfare" (Nakamba, Chan and Sharmina, 2017, p. 527). It extends across the entire supply chain, encompassing the organisation itself and its collaborative partners and suppliers (D'Eusanio, Zamagni and Petti, 2019; Najjar, Small and M. Yasin, 2020). This dimension goes beyond mere compliance with regulations; it demands that organisations take active measures to enhance the well-being of their employees, engage with their stakeholders, and contribute positively to society. It aligns with our research questions that delve into the extent of corporations' commitment to social sustainability and whether their efforts go beyond superficial compliance. The dimension addresses critical aspects such as health and safety conditions, the work environment, human and labour rights, ethical practices, and the impact on the community as sustainable indicators for the social dimension (Busse, Kach and Bode, 2016; Köksal *et al.*, 2017; Mamic, 2017; Saeed and Kersten, 2020).

2.2.2.1 Workplace Conditions

In this dimension, Workplace Conditions take centre stage. Organisations must actively ensure the well-being of their employees. By providing safe and ethical working environments, fair compensation, and promoting diversity and inclusion, they not only fulfil their moral obligations but also strategically position themselves to attract and retain top talent (Luzzini *et al.*, 2015). Beyond being a moral imperative, this approach is also a strategic move to attract and retain talent. This, in turn, contributes to the organisation's long-term sustainability, and it is closely linked to our research question regarding the depth of commitment to social sustainability.

2.2.2.2 Stakeholder Engagement

Stakeholder Engagement is equally critical. Actively engaging with stakeholders, including employees, local communities, and non-governmental organisations, is essential. Organisations must participate in initiatives related to community development, education, and health, demonstrating their commitment to social sustainability (Ahi & Searcy, 2013; Afshari *et al.*, 2022). This emphasises the

significance of stakeholder engagement in social sustainability practices, contributing significantly to our research inquiries.

2.2.2.3 Metrics for Social Impact

Measuring the social impact of SSCM practices is paramount for organisations to demonstrate their commitment. Metrics encompass gender equality, access to education, health and safety, poverty alleviation, and employment generation, serving as indicators of a company's social responsibility (Busse, Kach and Bode, 2016). This approach ensures that social sustainability isn't merely a checkbox but an integral part of an organisation's mission.

In essence, social sustainability focuses on the firms' responsibility and commitments towards various stakeholders, local communities, in which they operate and ethical aspects of the employee welfare (Miller and Engemann, 2019; Zou, Duan and Deng, 2019). Bonn & Fisher, (2011) introduces a metric that measures social sustainability in terms of gender equality, access to education, health and safety, poverty issues and the generation of employment opportunities. This underscores the multifaceted nature of the social dimension within SSCM, encapsulating a wide spectrum of social considerations. However, it also reveals a potential gap in the existing literature—a lack of a unified framework or comprehensive set of indicators for assessing social sustainability within supply chains. This notable gap suggests the need for further research to establish a standardised framework for evaluating social sustainability, thereby fostering a more systematic and robust approach to this vital dimension within SSCM practices. Such an approach would facilitate a clearer understanding of the depth and effectiveness of social considerations in SSCM, aligning with the research question that probes the extent to which corporations are truly committed to social sustainability and whether their efforts are more than superficial compliance with external expectations.

2.2.3 Economic Dimension of SSCM

The economic dimension of SSCM plays a pivotal role in shaping sustainable supply chain practices. It encompasses various considerations that warrant in-depth analysis, aiming at enhancing long-term economic performance (Carter and Rogers, 2008; Linton, Klassen and Jayaraman, 2007; Closs, Speier and Meacham, 2011). This dimension revolves around key aspects that include cost efficiency, revenue growth, and risk mitigation, all of which significantly contribute to an organisation's sustainability efforts. Key aspects include cost efficiency, revenue growth, risk mitigation, quality, speed, flexibility, and reliability, all of which significantly contribute to an organisation's sustainability efforts.

2.2.3.1 Cost Efficiency

Cost efficiency is a cornerstone of the economic dimension within SSCM, involving optimisation of resource allocation, streamlining supply chain processes, and minimising costs. Research by Seuring and Müller (2008a) highlights the significance of cost-effective procurement strategies. Sustainable companies are increasingly recognising that minimising waste in production processes and adopting efficient logistics are critical steps towards economic sustainability (Singh, Singh and Kumar, 2020). These practices not only reduce environmental impact but also enhance an organisation's profitability (Boruchowitch and Fritz, 2022). This dimension directly addresses the research questions concerning economic sustainability and its implications.

2.2.3.2 Revenue Growth

Another crucial facet of the economic dimension is revenue growth. Practices within this dimension aim to identify opportunities for increased revenue through sustainable product innovations, expansion into sustainability-conscious market segments, and the creation of sustainable brand value (Pagell and Wu, 2009). Sustainable products and services resonate with a growing segment of environmentally conscious consumers, creating new market opportunities (Sajjad, Eweje and Tappin, 2020). The study by Pagell and Wu (2009) emphasises that businesses can simultaneously achieve economic and environmental sustainability by focusing on sustainable product offerings and entering emerging markets with sustainability at the core of their strategy. This directly aligns with the research questions regarding the intersection of economic and environmental sustainability.

2.2.3.3 Risk Mitigation

Economic sustainability practices also encompass risk assessment and mitigation. Organisations recognise the financial risks associated with supply chain disruptions and are increasingly developing strategies to enhance financial resilience (Zsidisin and Ritchie, 2008). The research underscores the need for risk mitigation strategies in the supply chain to ensure economic sustainability. These strategies not only protect a company's financial interests but also contribute to its long-term viability. The relationship between sustainability and resilience can lead to improved organisational performance, and it's increasingly important for seizing emerging opportunities. For example, resilient supply chains demonstrated their ability to adapt and continue operating during the COVID-19 pandemic (Negri *et al.*, 2021).

2.2.3.4 Quality

The quality aspect of SSCM emphasises maintaining high standards in products and processes, essential for achieving economic sustainability. However, the integration of quality management into

SSCM often faces significant delays, primarily due to firms' reluctance to adopt sustainable practices. Many organisations perceive the transition to sustainable operations as complex and costly, resulting in a tendency to prioritise short-term quality measures over long-term sustainability goals (Micheli & Manzoni, 2010). This paradox creates a critical challenge: while striving for high quality, companies may inadvertently hinder their ability to innovate and adopt necessary sustainable practices in a timely manner.

Recent studies reveal that organisations grappling with this tension frequently prioritise immediate economic gains, neglecting the broader implications of sustainability on long-term operational efficiency (Hazen et al., 2014). High-quality standards can indeed reduce costs associated with returns and defects, yet the focus on short-term quality can lead to a reactive rather than proactive approach to sustainability. Consequently, firms may find themselves unable to adapt to changing market demands and regulatory pressures, ultimately compromising their competitive advantage (Wagner & Lentz, 2021). Thus, a critical examination of how quality management practices are aligned with sustainability initiatives is imperative. Without this alignment, the quest for quality may become a barrier to the timely adoption of sustainable practices, undermining the long-term viability and resilience of supply chains.

2.2.3.5 Speed

Speed in SSCM refers to the ability to deliver products and services promptly, thereby directly influencing customer satisfaction and loyalty. Efficient supply chain operations ensure timely delivery, allowing companies to respond swiftly to market demands and fluctuations, which is essential for securing competitive advantages (Christopher, 2016). However, while speed is often positioned as a key performance indicator, the complexity of achieving it within the framework of sustainability raises significant challenges.

The drive for speed can lead organisations to prioritise short-term gains over long-term sustainable practices, resulting in delays in the adoption of environmentally friendly initiatives. For instance, companies may rush to implement speed-enhancing strategies without considering their sustainability implications, potentially leading to suboptimal decisions that compromise future operational resilience (Zhu et al., 2013). Furthermore, organisations that lack the flexibility to adjust their processes promptly may find that their speed becomes a liability, particularly when market conditions or regulatory landscapes shift unexpectedly. Thus, while speed is critical for economic performance, it must be balanced with a strategic approach to sustainability, ensuring that rapid responses do not come at the expense of long-term viability and ethical considerations.

2.2.3.6 Flexibility

Flexibility within the economic dimension of Sustainable Supply Chain Management (SSCM) entails the ability to adapt to shifting market conditions and evolving customer demands. Flexible supply chain practices empower organisations to pivot in response to disruptions, emerging opportunities, or changes in consumer preferences. While this adaptability is often heralded as essential for maintaining economic stability and achieving sustainable growth, the reality is more nuanced. Companies that prioritise flexibility may find themselves grappling with the inherent challenges of integrating sustainable practices, especially when timing and organisational inertia create delays in implementation (Stevenson & Spring, 2007).

The timing of adopting sustainable practices can critically affect the extent to which flexibility is realised. Organisations often face rigid operational structures that resist change, which can exacerbate delays in sustainability integration. These delays are not merely operational setbacks; they can lead to missed market opportunities and increased vulnerability to risks associated with regulatory changes and environmental pressures (Kleindorfer et al., 2005). Consequently, while flexibility is touted as a key advantage, its effectiveness is contingent upon timely adoption of sustainability initiatives. This raises questions about the true extent of operational resilience in organisations that are slow to adapt, suggesting that flexibility alone may not suffice in fostering sustainable practices within supply chains.

2.2.3.7 Reliability

Reliability is critical in ensuring that supply chain processes are consistent and dependable. Reliable supply chains minimise disruptions and maintain a steady flow of goods and services, which is vital for economic sustainability. Consistency in supply chain operations builds trust with customers and partners, reinforcing an organisation's reputation and market position. Reliable practices within SSCM help in achieving long-term economic goals and stability (Mentzer, Min, and Zacharia, 2000).

2.2.3.8 Conclusion

The economic dimension stands as a critical component of SSCM, offering significant opportunities for organisations to achieve economic sustainability while contributing to environmental and social well-being. The integration of these economic practices is integral to addressing the research questions and propositions. It is through a thorough understanding of this dimension that we can assess the commitment of organisations to SSCM and the effectiveness of their economic sustainability practices.

Recent literature, including studies by Vousinas, (2019) and Ellram *et al.*, (2020), further reaffirms the growing importance of the economic dimension within SSCM. These studies emphasise the

significance of economic sustainability in modern supply chain practices, especially concerning cost benefits and overall economic performance. Moreover, they underscore how organisations actively seek to integrate economic objectives with environmental and social aspects within SSCM, aligning with the principles of the Triple Bottom Line.

2.2.4 Interconnections Among the Dimensions

While we've highlighted the economic, environmental, and social dimensions of SSCM as distinct facets, it is vital to acknowledge that they are not isolated but are intricately interconnected. In fact, the strength and efficacy of SSCM practices are often realised when these dimensions harmoniously interact, influencing and reinforcing one another (Luzzini *et al.*, 2015).

Consider the concept of cost efficiency within the economic dimension. The optimisation of resource allocation and the reduction of production waste not only yield economic benefits but also directly contribute to environmental sustainability by curbing resource consumption and waste generation (Linton, Klassen, and Jayaraman, 2007; Handfield & Sroufe, 2006). Additionally, these practices are often contingent on providing safe and ethical working conditions, thus intertwining the economic and social dimensions (Luzzini *et al.*, 2015).

Conversely, providing fair wages and safe working conditions to employees is not merely a social responsibility but also contributes to risk mitigation within the economic dimension by reducing the likelihood of work stoppages and legal liabilities (Zsidisin & Ritchie, 2008). It also fosters stakeholder engagement by enhancing the organisation's reputation and attractiveness to both employees and the community (Ahi & Searcy, 2013).

This interplay between the dimensions is a pivotal aspect of SSCM. Organisations that can effectively harness these interconnections often outperform others in terms of sustainability. As we delve deeper into our research, these interconnections will be a focal point, helping us understand how and why some organisations are more successful in implementing SSCM practices than others.

In conclusion, the economic, environmental, and social dimensions of SSCM are integral to the creation of a sustainable supply chain. Their interconnections and interdependencies underscore the complexity and depth of SSCM practices. Throughout the research journey, we aim to critically examine these dimensions, their interplay, and the extent to which organisations commit to SSCM and leverage these interconnections to address the research questions and propositions.

These three dimensions—economic, social, and environmental—form the cornerstone of SSCM practices, with each playing a pivotal role in the pursuit of a more sustainable supply chain. This holistic view of sustainability, encompassing economic, social, and environmental aspects, aligns perfectly with the definition we will employ in the research, as proposed by Ahi and Searcy (2013):

"The creation of coordinated supply chains through the voluntary integration of economic, environmental, and social considerations with key inter-organisational business systems designed to efficiently and effectively manage the material, information, and capital flows associated with the procurement, production, and distribution of products or services in order to meet stakeholder requirements and improve the profitability, competitiveness, and resilience of the organisation over the short- and long-term" (Ahi and Searcy, 2013, p.399).

The selection of Ahi and Searcy's (2013) definition for this research is based on its strong alignment with the specific research questions of this research and the insights gathered from the literature review. This definition effectively captures the holistic essence of Sustainable Supply Chain Management (SSCM) by highlighting the integration of economic, environmental, and social considerations into the inter-organisational business systems.

Ahi and Searcy's (2013) definition align well with the research questions. It comprehensively covers all three sustainability dimensions – economic, environmental, and social – which is essential for the objective of evaluating SSCM motivations and barriers. The focus on long-term improvement in profitability, competitiveness, and resilience supports the exploration of how SSCM practices evolve over time. Additionally, it emphasises aligning SSCM with stakeholder expectations, which is pivotal to the research. Its widespread use in the literature further validates its suitability for the study, making it a well-informed choice that provides a strong foundation for the investigation into SSCM practices and the interplay of economic, environmental, and social factors in supply chains.

Sustainable supply chain management (SSCM) is still a new and complicated concept, it is essential to take a holistic approach to comprehend the motives, drives, and barriers related to the adoption of SSCM. The following subsections will provide an overview of SSCM practices, it will then research motives that drive the adoption of SSCM and explore the relationship and interplay between social, environmental, and economic dimensions.

While these practices may be categorised into economic, environmental, and social dimensions, it is important to recognise that there can be significant crossovers and interconnections among them. SSCM is most effective when these dimensions work in harmony. For instance, cost-efficient practices

that reduce resource consumption contribute to both economic and environmental sustainability. Similarly, providing fair wages and safe working conditions to employees contributes to social sustainability while also reducing financial risks for the organisation.

2.3 Drivers for adopting SSCM

Various forces play a role in motivating firms to make a change. This section will review the literature that drives firms towards adopting SSCM. With a growing body of research in this field, scholars are working hard to understand what motivates companies to integrate sustainability into their supply chains. This section will examine the key internal and external drivers behind SSCM adoption and then explore how they relate to the three dimensions of sustainability.

Sustainability drivers typically fall into two categories: internal and external. Some researchers like to call them proactive (voluntary) and reactive (compliance-based) drivers (Rehman et al., 2021). Internal drivers cover aspects such as maintaining quality, enhancing a company's reputation, boosting operational efficiency, and addressing safety concerns. On the other hand, external drivers include regulatory factors, consumer demands, global environmental issues, and societal concerns that push companies to establish sustainability practices (Rao, 2002; Zhu and Sarkis, 2004; Green *et al.*, 2012; Bloemhof *et al.*, 2015; Meinlschmidt, Schleper and Foerstl, 2018; León-Bravo, Caniato and Caridi, 2019; Özbay *et al.*, 2022).

While other researchers, including Sajjad, Eweje and Tappin (2015) have split internal drivers into two distinct groups: normative and instrumental. Normative drivers are rooted in a firm's ethical and moral values, while instrumental drivers are aligned with bolstering the firm's reputation and enhancing its image (Sajjad, Eweje and Tappin, 2015; Paulraj, Chen and Blome, 2017a). On the other hand, external drivers emanate from pressures originating in the external business environment (Sajjad, Eweje and Tappin, 2020).

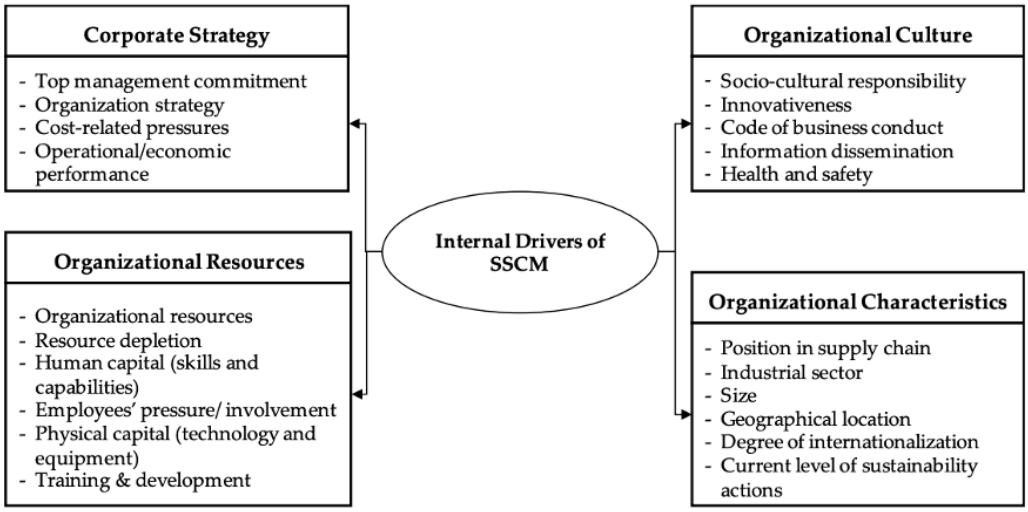
These internal and external drivers exert varied influences on a firm's sustainability endeavours, leading to outcomes such as increased operational efficiency, better customer satisfaction, and an expanded market presence (Bansal and Roth, 2000; Lintukangas, Kähkönen and Ritala, 2016; León-Bravo, Caniato and Caridi, 2019). Researchers studying the adoption of SSCM have recognised several drivers. Notably, the exhaustive work of Saeed and Kersten, (2019) analysed 217 articles focusing on internal and external drivers for the adoption of sustainable supply chain practice and provided a framework for each. Aligned with Saeed and Kersten's (2019) categorisation of internal and external drivers, this paper adopts a structured approach to delineate the primary drivers for SSCM adoption.

In the upcoming subsection, we will critically assess the efficacy of these drivers in promoting the adoption of SSCM practices.

2.3.1 Internal Drivers

Internal drivers are forces coming from within the company prompting changes to adopt sustainable practices often categorised as factors related to the company's culture, ethics, and values (Sajjad, Eweje, and Tappin, 2015; Morais and Silvestre, 2018), strategy and benefits, and resources (Paulraj, Chen and Blome, 2017). The systematic literature study done by Saeed and Kersten (2019), identified and grouped the internal drivers of SSCM into four groups, as shown in Figure 1. Organisational culture, corporate strategy, organisational resources, and organisational characteristics. For each of the groups, several drivers were identified: four corporate strategy drivers, five organisational culture drivers, six organisational resource drivers, and six organisational characteristics drivers.

Figure 1: Internal Drivers of SSCM



(Saeed and Kersten, 2019)

2.3.1.1 Drivers in Corporate Strategy

As seen in Figure 1 above corporate strategy group of internal drivers included top management commitment, organisation strategy, cost-related pressures, operational and economic performance. To fulfil SSCM-related goals, a firm's strategic approach necessitates not only internal support but also the formulation of a strategic sustainability (Saeed and Kersten, 2019).

The sphere of corporate strategy aligns with a set of internal drivers that reflect benefit-based motives. These encompass the strategic adoption of sustainability practices to enhance the firm's public image, bolster competitiveness, reduce operational costs, and elevate product quality (Alzubi and Akkerman, 2022).

Furthermore, financial performance emerges as a compelling driver for firms to engage in SSCM practices (Wang and Sarkis, 2013). Research consistently underscores the significant cost-reduction factor, driving firms to integrate SSCM or green practices with the expectation of limitation on operational costs (Walker, Sisto and McBain, 2008; Sajjad, Eweje and Tappin, 2015). Notably, a study conducted by Xu *et al.,* (2013) revealed that Indian firms have adopted greener supply chain practices to augment long-term profitability. In the Indian context, the construction industry has adopted green Supply Chain Management (SCM) practices to not only enhance profitability but also to bolster the market value of their properties (Kumar, Mathiyazhagan and Mathivathanan, 2020). Similar results were found in the oil and gas industry, firms mainly adopt SSCM to maximise profit (Gardas, Raut and Narkhede, 2019).

The relationship between internal drivers and financial performance is underscored by a comprehensive meta-analysis conducted by Orlitzky, Schmidt and Rynes (2003). Their findings emphasise the strong relationship between environmental responsiveness and financial outcomes, concluding that a driver becomes important when it impacts financial performance. In this context, corporations tend to exhibit heightened responsiveness to environmental concerns when these factors directly impinge on financial stability and risk mitigation (Rao and Holt, 2005; Dubey, Gunasekaran, Childe, *et al.*, 2017).

Furthermore, Paulraj, Chen and Blome, (2017) noted that with the growing literature surrounding the financial implications of SSCM, managers are adopting more sustainable practices in comparison to two decades ago when the financial relevance of sustainability was more uncertain. describe an evolving landscape characterised by the growing body of literature examining the financial implications of SSCM. During that period, corporations often exhibited reluctance to invest in SSCM practices (Orsato, 2006; Curkovic and Sroufe, 2007). However, the evolving discourse and mounting financial evidence have ushered in a transformation in corporate conduct. This transformation underscores the acknowledgement that the financial dimension occupies a pivotal position in the realm of SSCM practices.

2.3.1.2 Drivers in Organisation Culture

Organisational culture also plays a role when it comes to Sustainable Supply Chain Management (SSCM). This internal driver arises from the entity's socio-cultural responsibility, environmental priorities, business code of conduct, and health and safety concerns (Saeed, Waseek and Kersten, 2017). Notably, such a cultural commitment lays the foundation for more sustainable practices within the organisation.

In this context, the role of motivated employees assumes particular significance. Employee motivation can serve as a potent catalyst for ushering in cultural changes across the organisation (Engert and Baumgartner, 2016). The interplay between motivated employees and an organisation's culture may have significant influences on the adoption of SSCM practices. In some cases, organisations may appear to embrace sustainability in response to external pressures, such as consumer demand or regulatory requirements, without genuinely internalising these principles. Such superficial adoptions risk the danger of "greenwashing," where organisations merely project a sustainable image without making substantial changes.

However, it's important to recognise that this transformation extends beyond internal dynamics. The supply chain landscape involves multiple stakeholders, both upstream and downstream. (Hofmann, 2019; Kuhlmann, Bening and Hoffmann, 2023). The cohesive integration of these members into the SSCM framework is critical.

Furthermore, organisational culture emerges as a formidable factor influencing the adoption of SSCM. An organisational culture that actively promotes learning and innovation exhibits a strong correlation with SSCM adoption (Fantazy and Tipu, 2019; Hong *et al.*, 2022). However, a critical examination should delve into whether organisations genuinely foster an environment that promotes innovation or merely pay lip service to the concept. In some cases, organisations may claim to encourage innovation but stifle actual innovative efforts due to risk aversion or resistance to change.

Additionally, within the domain of organisational culture, corporate strategy plays a pivotal role. This involves setting both economic and non-economic performance goals (Pagell and Wu, 2009; Linnenluecke and Griffiths, 2010). It encompasses key elements such as managerial awareness and commitment, financial prudence, and robust operational and economic performance. Leadership, as a vanguard in this transformation, plays a crucial role. Their willingness to provide financial support and tangible assistance to operational departments can act as a catalyst, championing sustainability initiatives and thereby facilitating the organisation's comprehensive transition towards sustainability (Daily and Huang, 2001; Jose Chiappetta Jabbour, 2011).

While organisational culture plays a vital role in motivating SSCM adoption, a critical perspective is essential. Organisations should guard against superficial cultural changes driven by strategic motives or compliance. Genuine commitment to sustainability principles and practices is crucial for the long-term effectiveness of SSCM initiatives.

2.3.1.3 Drivers in Organisational Resources

Organisational resources, including the availability or depletion of natural resources, human capital, and technology, play a vital role in Sustainable Supply Chain Management (SSCM). When an organisation experiences a scarcity of critical natural resources essential for SSCM, this scarcity acts as a primary driver for exploring innovative and sustainable practices (Tate, Ellram and Kirchoff, 2010; Schrettle *et al.*, 2014; Govindan *et al.*, 2020).

The depletion of natural resources compels organisations to seek innovative, sustainable solutions. Such scarcity motivates them to identify alternative sources, invest in resource-efficient technologies, and adapt their supply chain strategies to reduce resource consumption (Luthra *et al.*, 2017). While this drive encourages innovative problem-solving, it warrants critical analysis. It underscores the catalytic effect of resource scarcity, compelling organisations to seek sustainable alternatives. It reflects commendable responses to contemporary business challenges, that emphasise the importance of securing these critical resources.

However, a cautious approach is essential to balance short-term remedies for immediate resource shortages with long-term SSCM objectives. A critical examination ensures that resource-driven solutions align with broader sustainability goals. Distinguishing between resource-driven sustainability and a lasting commitment to SSCM is crucial. Organisations reacting solely to resource constraints may revert to unsustainable practices when constraints ease. Thus, critical analysis ensures that SSCM practices become embedded within the organisational culture, extending beyond immediate resource challenges.

Moreover, resource scarcity encourages innovation and collaboration within organisations and across supply chains, stimulating the exploration of new technologies, research and development, and partnerships. Nonetheless, scrutinising the sustainability of these innovations and collaborations is vital to ensure they extend beyond addressing merely immediate resource challenges.

Resource governance and ethical considerations are equally important. Organisations navigating resource scarcity must consider resource management and ethical implications. Critical analysis ensures that the pursuit of alternative resources aligns with ethical and sustainable principles and prevents unintended contributions to resource exploitation or environmental degradation.

In summary, the scarcity of critical resources is a compelling driver for SSCM adoption. Critical analysis is indispensable for navigating these complexities, ensuring that responses to resource scarcity are sustainable and aligned with broader organisational and ethical goals (Govindan *et al.*, 2020).

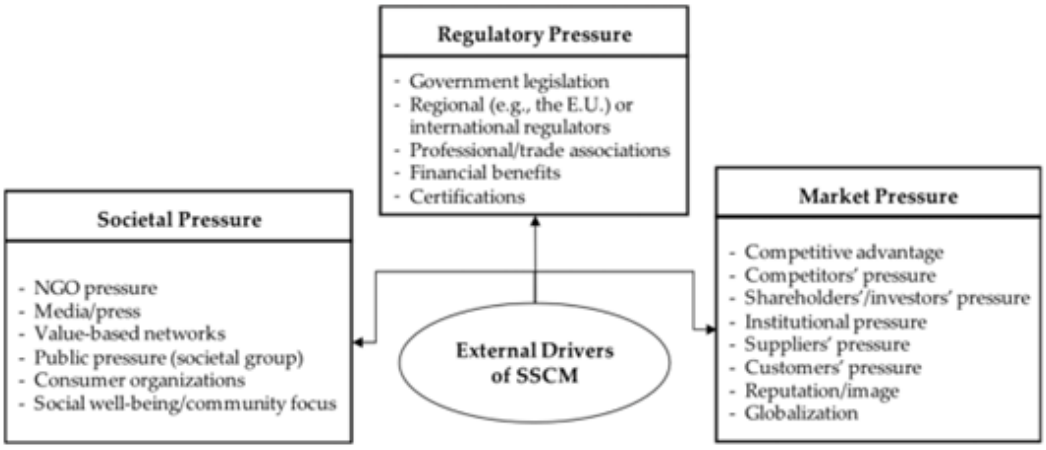
2.3.1.4 Drivers in Organisational Characteristics

The systematic meta-analysis conducted by Saeed and Kersten (2019) identified six key elements that fall into this group: firm size, geographical location, position in the supply chain, sector, degree of internationalisation, and the current level of sustainability. These elements significantly influence and drive sustainable practices within the supply chain. For instance, one of these elements, firm size, directly impacts the adoption of Sustainable Supply Chain Management (SSCM) practices. Several studies have confirmed that larger firms are more likely to face increased pressure to adopt sustainable practices within their supply chain.

External Drivers

External drivers are factors outside a company encouraging, pressuring, or forcing them to adopt certain sustainability measures (Köksal *et al.*, 2017). Such drivers include societal pressure from stakeholders such as customers, NGOs, media, competitors, and environmental pressure groups (Huang and Kung, 2010; Alblas, Peters and Wortmann, 2014) which can exert negative publicity on SSCM practices. Firms have been found to place considerable weight on customer demands when it comes to adopting any changes particularly if they are based in an industrialised country (Alblas, Peters and Wortmann, 2014)). Saeed and Kresten (2017) conducted a meta-analysis of drivers referred to in the literature, customer pressure is the most mentioned driver of sustainability. The research underscores that external drivers have been found to effectively compel or even force companies to become more sustainable (Seuring and Muller, 2008b).

Figure 2: External Drivers



(Saeed & Kersten, 2019)

2.3.1.5 Market Drivers

Under this classification of Saeed & Kersten (2019) a competitive advantage, competitors' pressure, shareholders pressure, institutional pressure, suppliers' pressure, customers' pressure, reputation, and globalisation. Market pressures and feedback from competing entities, stakeholders, and investors (Schrettle *et al.*, 2014) are also external factors that can drive toward SSCM. An example is the positive performance of sustainably produced products of competing companies, which places pressure on the corporation to produce sustainable products to stay in the market (Alblas, Peters and Wortmann, 2014).

2.3.1.6 Suppliers' Pressure

In today's growth of emerging economies, many firms choose to outsource various elements of their manufacturing. This can lead to various violations of sustainable social and environmental practices and increased risks associated with outsourcing (Petrini and Pozzebon, 2009). Thus, securing sustainable suppliers is more beneficial and lucrative for buyers, which helps mitigate the risk and improve the firms' image (Busse, 2016). However firm pressure on suppliers can also be a driver toward greater SSCM practices, reflected in downstream and upstream chain supply practices (Font *et al.*, 2008; Park-Poaps and Rees, 2010). Literature indicates that firms can exert influence on their suppliers across various industries, even if sustainability is not yet a regulatory requirement (Mzembe *et al.*, 2016). Galal and Moneim, (2016) found that firms located in a developed country make more proactive efforts to integrate sustainability measures upstream and downstream, and voluntarily integrate more SSCM practices. The exact driver of each company often remains ambiguous since many aspects come into play and underlying motivations remain unannounced (Paulraj *et al.*, 2015).

2.3.1.7 Customer's Pressure

Customers are one of the most influential drivers, consumers make the decision on whether they buy a product which can impact the firm's financial performance. Some industries are prone to delaying or speeding up adopting sustainable practices due to consumer purchasing patterns. Not only do consumers have a choice of buying or boycotting a product, but they also can determine how sustainable the firm is (Sandhu, 2022). To avoid losing sales firms respond to consumer pressure to become more sustainable (Walker and Laplume, 2014). Consumers also could impact the firm's sustainability as well as its supply chain (Sajjad, et al., 2015). Researchers have found that firms becoming more environmentally responsive are positively correlated with an increase in employee morale, improved stakeholder relationships and consumer perception (Sarkis, Zhu and Lai, 2011).

Some researchers underscored the role of the consumers in proactive implementation of sustainable measures. Some literature in developed countries notes that the increasing awareness of consumers regarding issues in social practices is the underlying driver (Park-Poaps and Rees, 2010; Gupta and Hodges, 2012). Additionally, research shows that people are willing to pay more for things when there is complete transparency (Shao and Ünal, 2019).

Although, if we consider apparel consumers, the primary factors they considered prior to making purchase are price, quality, and style although they are aware of socially responsible production (Shaw *et al.*, 2006; Gupta and Hodges, 2012). Therefore, apparel corporations are more likely to focus on the economic and environmental dimensions and delay the integration of practices that impact social aspects.

2.3.1.8 Globalisation, Competitors and Competitive Advantage

Globalisation has played a significant role in prompting corporations to reconsider their differentiation strategies to effectively respond to evolving market pressures and changing consumer behaviours (Clinton and Chatrath, 2022). The literature has explored how firms adapted to the dynamics of the market economy, with some emphasising the influential role of globalisation in shaping supply chain management (SCM) trends and Sustainable Supply Chain Management (SSCM) practices (Mzembe et al., 2016). For instance, companies began conforming to new logistical and environmental regulations to facilitate international shipments (Xu et al., 2013).

According to a study conducted by Mathiyazhagan et al. (2013), Indian firms were driven to adopt green supply chain practices due to considerable pressure from multinational firms identifying India as a potential growth market. This highlights how global corporations exert pressure on Indian businesses to embrace eco-friendly supply chain strategies.

Furthermore, research indicates that French firms embraced SSCM practices under the influence of pressure from both local and international competitors (Ageron, Gunasekaran and Spalanzani, 2012). This competitive pressure motivated them to enhance their sustainability initiatives.

There is a positive relationship between competitive advantage and the adoption of sustainable social and environmental practices within the supply chain (Chacón Vargas, Moreno Mantilla and de Sousa Jabbour, 2018). This relationship was supported by a study involving 224 Colombian firms, which revealed that both social and environmental practices contribute to enhancing a firm's competitive advantage. Interestingly, social practices had a more pronounced impact than sustainable practices in this context.

However, it's worth noting that McWilliams and Siegel, (2001) highlighted that the implementation of Corporate Social Responsibility (CSR) activities can sometimes be costly, potentially putting firms at a competitive disadvantage, especially when consumer preferences within their industry don't prioritise CSR practices. These findings collectively emphasise that adopting Sustainable Supply Chain Management (SSCM) practices can help firms maintain competitiveness and effectively address the demands of both local and global economies.

2.3.1.9 Reputational pressure

Issues related to firms' public image can also be a driver for adopting SSCM practices. The desire to keep a good public image/reputation impacts the firm's decision making this extends to its supply chain (Sajjad et al., 2015). A study by Mani, Gunasekaran and Delgado, (2018) argued that the reputation of Indian firms working in the manufacturing sector improved after adopting sustainable practices.

2.3.1.10 External Societal Drivers

Studies have underscored the influential roles of media and society in driving sustainable practices within the supply chain (Chkanikova and Mont, 2015). NGOs have exerted significant pressure on firms to adopt Sustainable Supply Chain Management (SSCM) practices (Beamon, 2008).

The digital age has provided sustainability drivers, including the media, pressure groups, activists, and NGOs, with a platform to amplify their desired messages and mobilise organisations toward sustainability goals (Najjar et al., 2020). With an online presence, media and various stakeholders have become potent resources for raising awareness and pressuring decision-makers (Paulraj et al., 2015).

Media, in particular, has become an effective driver capable of influencing consumer purchasing behaviour, which ultimately impacts firms' economic performance (Tang and Zhou, 2012; Park-Poaps and Rees, 2010). Park-Poaps and Rees (2010) suggest that positive deviations from standard behaviours are typically a reaction to negative public and media criticism. Notably, cases that trigger public outrage, such as the 2013 Rana Plaza tragedy in Bangladesh with over 1,000 casualties, quickly reverberate through supply chains (Economist, "Bursting at the Seams—Bangladesh's Clothing Industry"). Supply chains, depending on the industry, face significant risks when associated with unsustainable practices, which can tarnish their reputation and hinder their performance (Spar and La Mure, 2003; Busse, Kach and Bode, 2016).

Paulraj et al. (2015) pointed out that Apple Inc. had kept information about their supply chain confidential until an NGO exposed violations reported by workers in their overseas supply chain

operations. The NGO, in collaboration with the media, unveiled significant social and environmental violations, which had a detrimental impact on Apple's reputation, brand perception, and consumer behaviour. This serves as an example of multiple drivers aligning and triggering one another. Subsequently, Apple underwent a major transformation, implementing changes, conducting regular audits, and initiating the publication of annual reports on its Sustainable Supply Chain Management (SSCM) practices. The precise catalysts for these changes, whether driven by the establishment of a sustainable corporate culture or instigated by stakeholders such as customers, investors, and the media, remain undisclosed (Paulraj et al., 2015).

Nevertheless, some researchers argue that NGOs play an active role in advancing social sustainability over environmental practices within the supply chain (Köksal et al., 2017). Despite the debate, these changes resulted in improved social and environmental practices and, at the very least, contributed to restoring their economic sustainability due to an enhanced public image.

2.3.1.11 Regulatory Drivers

Researchers often identify regulatory pressures whether from governmental or regional legislation as the most influential external driver for firms to adopt Sustainable Supply Chain Management (SSCM) practices (Bloemhof *et al.*, 2015; Meinlschmidt, Schleper and Foerstl, 2018; León-Bravo, Caniato and Caridi, 2021; Özbay, 2021). Government mandates and regulations have compelled firms to scrutinise their operations and ensure compliance (Darnall, Jolley and Handfield, 2008). Failure to comply has resulted in fines and the loss of licenses (Kassinis and Vafeas, 2006). Saeed & Kersten grouped the following drivers under regulatory pressure: (1) Government Legislation, (2) Regional/International Regulator, (3) Professional/Trade Associations, (4) Financial benefits, (5) Certifications.

Regulatory pressures are not limited to direct laws; industry standards and certifications also play a significant role in shaping supply chain practices. Many firms voluntarily pursue certifications such as ISO 14001 (Environmental Management) or SA8000 (Social Accountability) to demonstrate compliance and gain a competitive edge. Research indicates that these external regulatory and certification pressures often encourage firms to adopt sustainable practices that align with legal requirements, especially when non-compliance could incur fines or reputational damage (Saeed & Kersten, 2017). While a sustainable practice may not be a regulatory requirement, industry associations can exert influence and pressure firms to raise the bar and standards (Font et al., 2008). Higher industry expectations can have a positive effect, although some argue that companies often choose not to exceed industry standards and what is considered acceptable (Jorgensen et al., 2003).

A survey conducted by Zhu, Sarkis and Geng, (2005) illustrated that Chinese manufacturers implemented environmental practices into their supply chains due to regulatory pressures. Similarly, a study by Xu et al. (2013), which examined thirty-two drivers, concluded that Indian firms are primarily pressured by policymakers to adopt sustainable practices within their supply chains, regardless of the firm's size. Comparable results were observed in a study conducted by Mani, Gunasekaran and Delgado (2018), where a review of 55 Portuguese firms concluded that they adopted social practices in their supply chains to comply with local and regional regulations and avoid fines, contradicting existing literature. This is also evident in a study conducted by Paulraj et al. (2017), where one of the most frequently mentioned external drivers encouraging supply chain managers in Germany to embrace SSCM was driven by governmental sustainability policies.

2.3.1.12 Market and Peer Pressure

While regulatory pressures are a strong driver for adopting sustainable practices, market forces and peer pressure also play a significant role in shaping firms' decisions. Peer pressure, in the terms of firm-to-firm or firm-to-supplier influence, has been found to be effective in shaping SSCM practices (Font *et al.*, 2008; Park-Poaps and Rees, 2010). Often, this pressure arises as a response to negative public and media criticism, driving firms to align with broader industry standards. Industry associations, for example, can set benchmarks that raise expectations across supply chains (Font et al., 2008). However, some argue that companies may merely meet the minimum without pushing for improvements beyond what is required or considered acceptable (Jorgensen et al., 2003). Magnan (2006) and Paulraj et al. (2015) suggests that imitation of sustainable behaviours is particularly prevalent in developed countries, where firms adopt sustainable practices to stay competitive or manage their reputation, rather than from an intrinsic desire to improve sustainability.

A study by Zhu et al. (2005) indicated that some firms are more likely to adopt sustainable practices, such as more sustainable packaging or greener logistics, primarily to align with their values and reduce the risk of negative media attention, rather than as a response to regulatory compliance. This highlights how corporate social responsibility (CSR) and sustainability-driven differentiation can motivate firms to serve as market-driven motivators for firms to exceed industry standards. Some firms also see a competitive advantage in adopting sustainable practices. By improving their environmental performance and increasing transparency, they can attract customers, differentiate from competitors, and enhance brand value. However, not all firms adopt these practices for the right reasons; many do so primarily to mitigate risks associated with public scrutiny or to gain approval without fundamentally changing their operations.

Peer pressure among firms can further impact sustainability drivers within an industry. Font et al. (2008) argue that peer pressure contributes to raising sustainability standards in the industry. These heightened expectations create external pressure on corporations not to meet non-legislative standards. Other researchers refer to this as 'imitation' (Aerts, Cormier and Magnan, 2006; Paulraj *et al.*, 2015). Their research suggests that, especially in developed countries, corporations imitating other corporations plays a major role in adopting SSCM practices (Paulraj *et al.*, 2015). Companies may transition to more sustainable packaging to publicly align with their values, even if their true motivation is to mitigate media scrutiny, gain a competitive advantage, or reduce costs (Bloemhof *et al.*, 2015; León-Bravo, Caniato and Caridi, 2021).

2.3.2 Internal and External Drivers, which is more effective?

The literature on SSCM identifies numerous drivers for adopting sustainable practices. Corporations are continuously exposed to factors that impact sustainability practices to varying extents and in different ways (Tate, Ellram and Kirchoff, 2010; Carter and Liane Easton, 2011). Alzubi and Akkerman (2022) argue that stakeholders' role is substantial and 'critical' in the implementation of sustainable practices, regardless of internal or external stakeholders.

In a review Saeed and Kersten's (2019) review of 217 articles examining the impact of various drivers, it was found that media tended to impact purchasing decisions, while shareholders had a greater influence on logistical decisions of supply chains. Additionally, they identified that external drivers exert more influence on corporations than internal sustainability drivers. Likewise, (Ageron, Gunasekaran and Spalanzani, 2012) reported that in French firms, external pressures were more effective than internal factors. Research by Biswal *et al.*, (2018) and Saeed & Kersten (2019) concludes that external drivers apply more pressure than internal drivers in in adopting SSCM practices.

Saeed and Kersten (2019) reviewed the occurrence of drivers across journals, the classified the drivers as external and internal and further broken them down to primary and secondary drivers. They reported that external drivers exerted more pressure than internal drivers when it came to adopting SSCM.

Paulraj, Chen and Blome, (2017) collected data in Germany from 259 supply chain managers, comparing internal and external pressures in decision making, and they found that although external pressures push corporations to take some SSCM, the internal factors, namely the impact of the culture and values of the corporation have a greater influence on SSCM practices. Other literature has also underscored that although other drivers contribute to SSCM, it is corporate culture and values that create genuine change towards greater sustainability (Dubey, Gunasekaran, Childe, *et al.*, 2017).

DeSimone and Popoff, (2000) argued that external drivers lead to compliance-based and reactive corporate measures which are less likely to result in sustainable practices while internal drivers more often lead to corporations acting proactively.

Several researchers suggested that internal drivers are more effective in motivating firms to adopt sustainable practices within their supply chain. A study by Köksal *et al.*, (2017) concluded that in the textile industry adoption of sustainable social practices within the supply chain is driven by internal practices. While a study by Morais and Silvestre, (2018) concluded that sustainable initiatives arose from the firm's moral and ethical values. (Paulraj, Chen and Blome, 2017), argued that although internal and external drivers can motivate the adoption of SSCM practices, internal ethics and values are more likely to have an impact on the adoption of SSCM practices.

Other researchers have argued that internal and external drivers can equally influence the adoption of SSCM practices. Sajjad, Eweje and Tappin (2019) concluded from interviews with managers from 23 companies in New Zealand that internal and external drivers have equal impact on sustainability measures. A study conducted by Lozano (2015) interviewed 13 top-level corporate managers and found that the most stated internal drivers are leadership, business approach culture, and reputation. The most stated external drivers were customer demands and legislation. Critically, they underscored that ranking the types of drivers or comparing internal with external drivers is not very effective in assessing which is more influential. Explaining that various factors come into play when firms make sustainability-related decisions. Thus, a more holistic approach is needed.

The discussion above suggests that there are several internal and external drivers that influence the firms' adoption of sustainable practices within their supply chains. This indicates that managers may find it challenging to simultaneously respond to each of the drivers (Mathiyazhagan *et al.*, 2015). Managers must identify and prioritise which driver will help the firm to successfully implement SSCM (Sajjad, Eweje and Tappin, 2019).

2.3.3 Conclusion

The previous sections have highlight he importance of identifying and understating what are the main motives/drives for the firm in adopting SSCM. Corporate motives can be explored as internal and external. Motives are the desires of the corporation. Often a corporation cannot take steps toward implementing them simultaneously (Mathiyazhagan *et al.*, 2015). Therefore, drivers become another force that allows a corporation to prioritise one change over another (Sajjad, Eweje and Tappin, 2019).

Internal motivations are based on changes desired within the borders of the corporation. External motivations address relations with external stakeholders.

SSCM field is in the early stages of maturation (Hoejmose and Adrien-Kirby, 2012) and displays uneven distribution of research across drivers, leading to biases. For example, Lozano (2015) interviewed 13 field experts and only one mentioned peer pressure as a driver of SSCM, likewise, researchers in the field of SSCM have rarely considered peer pressure in their driver study. Another example is the role of increased consumer awareness.

Researchers have also categorised internal and external drivers as primary or secondary. Sustainable practices may be adopted due to the impact of a driver, however, that driver only became relevant due to what it's preceding. Hall, (2000) noted that consumer awareness and demands regarding sustainable practices placed pressure on regulatory bodies to amend laws to incorporate sustainable practices and penalise corporations that violate certain environmental regulations. Although the often-documented driver is legislation, the primary driver may have been consumer awareness and societal pressure. Sometimes it is various drivers contribute to the change, for example, if pressure groups in addition to consumers place pressure on legislators (Saeed & Kersten, 2019). The complexity of identifying the initial drivers that catalyse another driver is also documented in the literature (Zimon, Madzik and Sroufe, 2020).

Another is ambiguity regarding corporate intentions or motives. Legislative incentives and regulations may drive an organisation to integrate sustainable measures; however, the underlying reason is based on financial benefit or avoiding penalties (Mani, Gunasekaran and Delgado, 2018; Jia, Gong and Brown, 2019). Therefore, corporations are often seen as a black box (Jensen and William H. Meckling, 1979) even when conducting transparency reports; intricacies are rarely fully understood (Lozano, 2015). There have been efforts by researchers to better identify which drivers contribute to change. For example, Walls and Hoffman (2013) assessed 'moral goodness' by comparing sustainability compliance norms to the degree of compliance; if they exceeded the norm, it was an indication of their 'moral goodness' (Marcus and Fremeth, 2009).

Some researchers argue that to understand the role of drivers it is critical to note whether a corporation is in a developed or developing country. Mzembe *et al.* (2016) find that developing countries' external drivers have greater impact on the SSCM practices (Mamic, 2017). Other researchers argue that firms in developed countries are driven by an interplay of internal and external drivers (Carter & Jennings, 2002; Walker & Brammer, 2013).

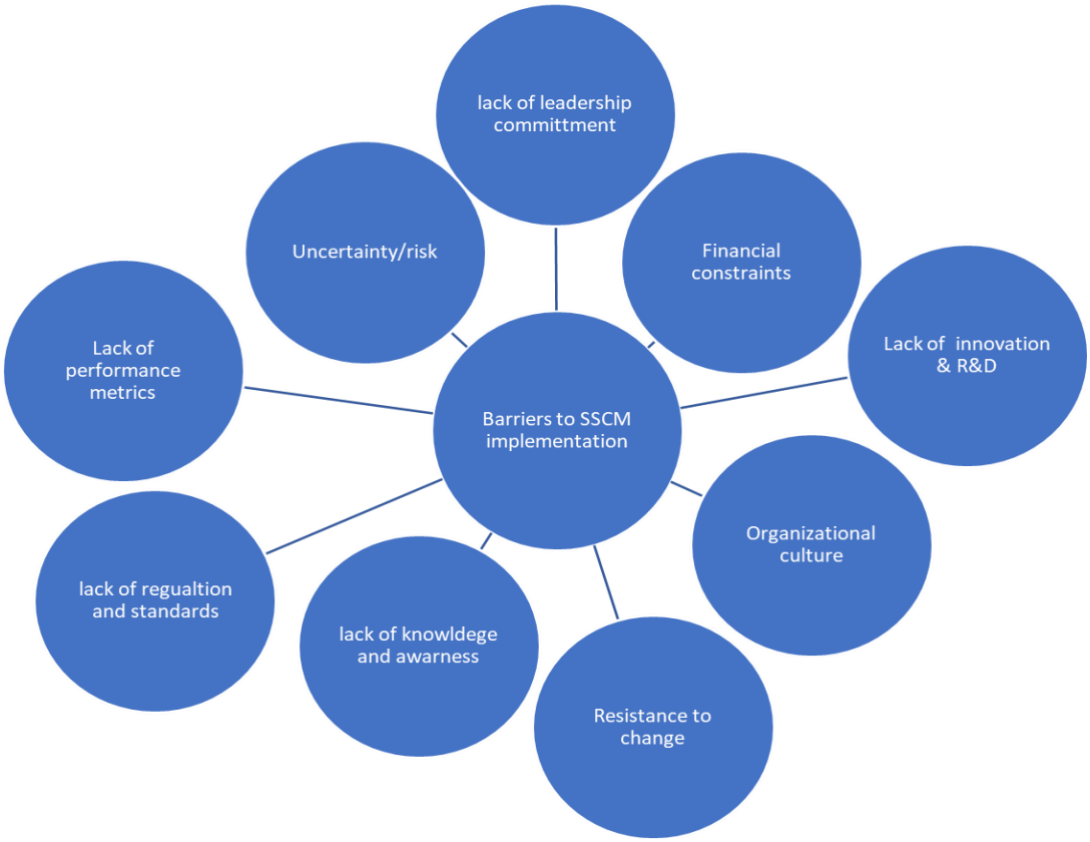
Managers need to understand and prioritises the drivers that can assist the firm in adopting SSCM, and how each of the drivers influence and motivate the firm's adoption of sustainable practices. One of the aims of this research is to answer the research question what motivate/drivers' firms to adopt SSCM practices? The following sections will explore of the SSCM Practices utilised by firms to become sustainable.

2.4 Barriers to SSCM adoption

The previous section provided the drivers for adopting SSCM, this section will review the literature highlighting barriers of implementing SSCM while placing the context on why firms may delay adopting sustainable practice within their supply chain.

The major barriers in found in literature include the following: (1) Lack of leadership commitment; (2) Financial constraints; (3) Organisational Culture inhibitive to sustainability; (4) Lack of innovation and R&D (i.e., Technology, suppliers, material and process); (5) Lack of knowledge & awareness; (6) Lack of regulation and standards; (7) Resistance to change; (8) Lack of performance measurements; (9) Uncertainty/risk associated with becoming sustainable . Each of the subsections below will discuss one of the barriers are seen in literature.

Figure 3: Summary of Barriers to Adoption of SSCM Practices



2.4.1 Barriers Related to Financial Constraints

There is an impasse between adopting sustainable practices and the increasing financial cost. Firms typically are required to adopt new systems for the implementation of SSCM, which needs a significant amount of investment (Ansari and Kant, 2017). Firms are expected to find funding to implement these expensive programmes, however, they are constrained in terms of financial resources which can significantly impede the adoption of sustainable practices (Hervani, Helms and Sarkis, 2005). Costs associated with SSCM practices may also become problematic when consumer purchasing behaviour does not align with sustainability. For example, consumers prioritise low prices (Gupta, and Hodges, 2012), however, social sustainability requires higher labour pay (Köksal, 2017).

Some costs linked to becoming sustainable include employee training, supplier development, and changes in infrastructure and equipment (Grimm, Hofstetter and Sarkis, 2014). A study done by (Meade, Sarkis and Presley, 2007) estimated the cost of implementing SSCM practices could be around 20% of the firm's aggregate income. The firm depending on their suppliers often must also pay a certifying body to validate their supplier's practices (Zimon, Madzik and Sroufe, 2020). This may lead the firms to consider changing their suppliers, cost-sharing, or buying from low-cost non-sustainable suppliers (Walker and Brammer, 2013). A study conducted by Morali and Searcy, (2013) stated that all 18 experts interviewed listed financial cost among the primary barriers to incorporating sustainability into the supply chain. Another study that identified 13 barriers to adopting SSCM included additional costs to dispose of hazardous material, the cost of eco-friendly packaging, and the cost of sustainability and economic conditions (Govindan, 2014).

2.4.2 Barriers Related to Lack of Leadership Commitment

The commitment of top management is essential for developing a new business strategy that aims to implement SSCM successfully Moktadir *et al.*, (2018). Leadership commitment is required in the implementation of sustainable practices they are in control of the firm resources and can support the implementation of sustainable initiatives (Menon and Ravi, 2021). Without the commitment of top management successful implementation of SSCM will be challenging (Turker & Altuntas, 2014; Wittstruck & Teuteberg, 2012), and top management impact the firm's policy, training needs, and tech advancements (Luthra *et al.*, 2017). Ansari and Kant (2017) identify a lack of management commitment as a barrier to implementing SSCM. A study that was carried out by Luthra and Haleem 2015, studied 10 barriers to the successful implementation of SSCM, the results of the study concluded the lack of top management commitment was a critical barrier.

Lack of top management commitment is linked to a lack of reverse logistics (Moktadir *et al.*, 2018), insufficient SSCM training for employees, and low employee involvement in SSCM practices (Biswal *et al.*, 2018). Top management of a firm contributes substantially to the firm culture (Dubey et al., 2017), therefore changes become more challenging when a shift in mindset and culture is needed (Preuss, 2009; Walker & Jones, 2012).

2.4.3 Barriers Related to Organisational Culture Reserved to Sustainability

Studies have underlined that sustainability extends beyond materials, design, technology, and logistics to include mindsets and culture (Baumgartner & Zielowski, 2007; Baumgartner, 2009; Linnenluecke et al., 2009). Culture is the set of values, beliefs, and mindsets of a group of people (McSweeney, 2002). Literature has reported that an organisation's culture can be a driver to adopting sustainable practices however, if the organisation's culture is inhibitive to sustainable practice, then it could act as a barrier. The firm's cultural beliefs on sustainability may vary based on the industry or country.

Cultural change towards sustainable thinking is necessary (Linnenluecke and Griffiths, 2010; Engert and Baumgartner, 2016). Gill and Pabla (2013) argued that firms need to invest in a cultural change programme to increase their chances of the successful implementation of SSCM. Firms with strong values and ethics can lead their employees to consider the environmental and social consequences of their decisions (Bonn and Fisher, 2011) thus, influencing other members of the supply chain to adopt sustainable practices (Amaeshi, Osuji and Nnodim, 2008).

2.4.4 Barriers Related to Supply Chain Resistance to Change

As mentioned, in the subsection above the firm's culture will need to open towards sustainable practice and Changes. However, resistance to change, especially throughout the supply chain acts as a barrier; for instance, (1) firms need to consider the varying political and geographic cultures of their supply chain, (2) apprehension about the unfamiliar, (3) inadequate communication, not to mention employees questioning the (4) advantages of becoming sustainable (Govindan and Hasanagic, 2018). Al Zaabi, Al Dhaheri and Diabat (2013), research highlights that the cultural differences within the supply chain is a major barrier to the successful implementation of SSCM. Many studies have linked lack of cultural awareness and resistance to change can delay the successful adoption of SSCM(Abbasi and Nilsson, 2012; Govindan and Hasanagic, 2018).

2.4.5 Barriers Related to Lack of Knowledge & Awareness of SSCM Benefits

Developing a new business strategy in line with sustainable practices is essential for the successful implementation of the SSCM (Murthy and Naidu, 2012). The employees and management play a role

in implementing SSCM, after all they are the people responsible for innovating and applying the sustainability initiatives. A study by Beckmann and Pies (2008), reported that to become sustainable, depending on the contribution of the employees and management. However, this is not always possible if the employees lack the knowledge, and training, and are not aware of the benefits of sustainable practices. Research has reported that lack of employee training is a barrier for SSCM (Ansari & Kant, 2017).

A study by Carter & Rogers (2008), argued that lack of employee motive is a barrier to SSCM. Other studies also attested, employees with lower educational backgrounds and lack of training, often feel that sustainable practices are irrelevant, and don't push for the SSCM (Luthra *et al.*, 2017). Another study pointed out that lack of environmental training is an influential barrier when adopting sustainable practices (Wang *et al.*, 2016)

Customers' lack of awareness of sustainable alternative products is also a barrier (Moktadir et al., 2018). This can lead to a lack of customer support which is one of the most critical barriers to implementing SSCM practices (Winter and Knemeyer, 2013; Tumpa *et al.*, 2019). Lower prices were not the only factor why consumers didn't buy sustainable products, the reasons included inadequate information, and the time required to identify the products.

2.4.6 Barriers Related to Lack of Regulation and Standards

Another commonly mentioned barrier in literature is the lack of government regulations and standards. The lack of government regulations and eco-friendly policies has discouraged the adoption of SSCM (Menon and Ravi, 2021). Government regulations and industry standards can drive sustainable behaviour by firms and their suppliers, however, the lack of them acts as a barrier. Scholars have also argued that the lack of governmental incentives to adopt sustainable practices is also a barrier (Prakash and Barua, 2017). Regulations give a levelled ground for compliance and encourage firms to increase their sustainable practices despite the cost associated with adopting sustainable practices.

2.4.7 Barriers Related to Lack of Innovation and R&D in Sustainability (i.e., technology, processes, suppliers, materials…)

Lack of innovation and R&D in sustainability is another barrier for successfully adopting SSCM practices. Addressing sustainability issues requires firms to invest in innovation, as highlighted by Bonn & fisher, (2011). Several studies have reported that lack of new tech is a significant barrier (Mathiyzhgan et al., 2013; Govidan et al., 2014). Anasri and Kant (2017) emphasise that the absence

of advanced information technology and integrated management systems poses a substantial barrier to SSCM implementation.

Moreover, the design phase of a product, which accounts for 80-90% of its costs and recyclability, leaves a minimal room for the process of recycling itself (Bernon *et al.*, 2013). Bernon et al. (2013) stress the importance of the design phase, which includes the physical production, assembly, and disposal of the product, as well as planning and delivery. However, there are challenges when designing eco-friendly products present a substantial barrier when adopting SSCM (Majumdar & Sinha, 2019; Govindan et al., 2014). The overall complexity of incorporating green processes in the design phase impeded the implementation of green procurement, logistics and operations (Majumdar & Sinha 2019).

Suppliers also play a major role in implementing SSCM (Bernon *et al.*, 2013). The lack of sustainable/green suppliers hinders the focal firm's successful adoption of SSCM practices (Ansari and Kant, 2017). Additionally, the supplier's lack of commitment and resistance to change affects the successful implementation of SSCM (Mont and Leire, 2009; Drohomeretski, Da Costa and De Lima, 2014).

2.4.8 Barriers Related to Uncertainty/Risk

Köksal et al. (2017) identify 'cognitive complexity' when the amount of information is too substantial with numerous uncertainties and trade-offs. An example is an adaptation of changing sources to organic cotton to decrease environmental damage, this may then impact the water supplier, transportation, wages, and competitive prices. Applying the environmental or social standards across the supply chain may come at the cost of one another and have substantial ambiguity which leads to the delay in applying SSCM practices. Complexities can be seen in trade-offs assessing the environmental impact of transportation methods and delivery time (Holweg and Miemczyk, 2002). Significate challenges arise from the complexity and multi-dimensional approaches (Langer and Schön, 2003; Govindan, Shaw and Majumdar, 2021).

Literature has documented the uncertainty found in every stage of the supply chain such as sustainable production of other players (Sarkis et al., 2011), reverse logistics (Said *et al.*, 2020) and green innovation and market uncertainty (Rao and Holt, 2005). Decision-making under uncertainty is viewed as a risk, and firms are continuously finding ways to mitigate risk this, therefore, may delay and create challenges when adopting sustainable practices.

Interpretation considers how sustainability can be translated across a supply chain. Every decision taken by management from the design phase all the way to the product end of the life cycle has a significant effect on the successful implementation of SSCM (Bernon et al., 2017). The researchers provide examples of sustainability not being incorporated in "design (Murphy and Richard, 2003), legislation (Livingstone and Sparks, 1994), or policies (Murphy et al., 1995) of logistics systems". Inertia refers to the fear of corporations making changes, especially with ambiguity regarding the interpretation and financial implications (Keating *et al.*, 2008). Carter and Rogers (2008) underscore the importance of clarity in operationalisation, explaining that clear guidelines and frameworks are needed to address real-world sustainability whilst high-level descriptions are not effective.

Supply chains face major challenges as they extend their concerns beyond cost or quality issues and toward environmental and social sustainability (Porter and Kramer, 2007). The focal firm must weigh the value of the social and environmental dimensions against the economic. The sustainability adoptions must integrate the three dimensions to be more effective, extending beyond just having some sustainable practices (Carter and Rogers, 1997). Meckenstock, et al. (2015) underline the complex relationship between the dimensions of the TBL. Matos and Hall (2007) identify that the ambiguities regarding the interplay between dimensions and the impact across the supply chain prevent adaptation of practices. Further, some practices are adopted to improve performance in one dimension, and no improvement is found, in addition to risks to the performance of other dimensions.

In addition to the above, some scholars argue that sustainability doesn't guarantee that you will get a return on that investment (Nguyen *et al.*, 2022). A low return may cause firms to question adopting sustainable practices, joined with competitive pressures in the market, this will prevent firms from incorporating sustainable supply chain practices (Zhu, Sarkis and Lai, 2007)

2.4.9 Barriers Related to Sustainable Performance Measures

There is evidence suggesting that sustainability within supply chains has aided organisations in achieving better performance (Tsoulfas and Pappis, 2006). However, Tay et al., (2015) argue firms are usually reluctant to invest in expensive SSCM initiatives and accept the markup associated with sustainable products due to measuring efficiency and effectiveness in economic terms, Tay et al., 2015). The economic factor plays a great role when making decisions regarding the supply chain (Ansari and Kant, 2017). This is inconsistent with the notion of combining three dimensions to achieve economic growth and improve environmental and social standards. Researchers have agreed to successfully implement SSCM, managers need to balance between all three aspects of sustainability (Pagell and Wu, 2009).

Performance metrics of sustainability within the supply chain are closely tied to quality management (QM) practices (Teuscher *et al.*, 2006; Closs *et al.*, 2011). In this context, QM can act as a barrier to the timely adoption of sustainable practices. According to Beske-Jansen et al. (2015) there are four stages of quality management for supply chain sustainability, including the identification of instruments, the definition of concepts, identification of systems, and the introduction of standards. A robust quality system is generally considered a requirement for effective environmental management; but research on the relationship between specific QM practices and sustainability performances is scarce (Jackson *et al.*, 2016). Beske-Jansen et al. (2015) further argue that different aspects of supply chain sustainability require distinct QM strategies.

For example, the management of quality within the context of environmental sustainability of a supply chain should involve instruments like life cycle assessment, environmental reporting, auditing, lean production, and the introduction of standards like ISO 14001, inter alia. While tools and practices of QM can support sustainability as they have common themes, it is essential to develop and adapt the tools and practices, rather than apply them as they are (Siva et al., 2016). To achieve more SSC, firms must incorporate both economic and non-economic measures (Kuar et al., 2022; Beske & Seuring, 2014).

To improve quality, we need performance measures and standards. The establishment of programmes/processes to achieve quality improvement based on performance standards, measurements, and reports. Nevertheless, investigations of specific QM standards contributing to SSCM outputs, or vice versa, are not evident in the literature, leading to contradictory findings (Schoenherr and Narasimhan, 2012). Scholars have been researching the link between lean management and sustainable supply chain management (Baliga, Raut and Kamble, 2020)' alongside quality (ISO 9001) and environmental (ISO 14001), all of which face challenges due to the lack of sustainability performance standards (Heras-Saizarbitoria and Boiral, 2013).

For example, in the textile industry, firms must identify solutions that include quality control, environmental considerations, and innovation (Suhardi *et al.*, 2019). This requires substantial expenses, risk, and uncertainty, with no standardised management standards potentially hindering progress and delaying the transition sustainability (Zimon, Tyan and Sroufe, 2020). Therefore, the firm is likely to be challenged by all five categories and is more likely to delay the transition towards sustainability (Abbasi and Nilsson, 2012).

Thus, despite the ongoing debate on the potential outcomes of ecologically friendly supply chain activities (Prajogo, KY Tang and Lai, 2014), the benefits/outcomes of SSC practices are poorly understood and present complexities (K. Roehrich, Grosvold and U. Hoejmose, 2014; Mastos and Gotzamani, 2022). These measures are essential for managing and navigating the competitive global market. This research fits within this gap by investigating how sustainable business practices in the supply chain can be facilitated through the interactions between the lead firm within the supply chain and the rest of the firms within the automotive industry.

2.4.10 Summary of Barriers

Other researchers have attempted to classify SSCM barrier into groups. For instance, Patel & Desai, (2023) grouped the various barriers according to attributes into 5 categories, (1) Strategy oriented barriers, (2) Technology oriented barriers, (3) Social-Cultural Barriers, (4) System-oriented barriers and (5) individual barriers. Abbasi and Nilsson (2012) grouped them into 5 categories in terms of Cost, Uncertainties, Complexities, Mindset and Culture Changes, and Operationalism. Others have broken down barriers to internal/ external barriers (Dahooie et al., 2020; Narimissa et al., 2020; Sajjad et al., 2019).

The results of each of these studies varied. Some scholar identified 19 internal barrier and 10 external barriers for adopting SSCM (Walker & Johns, 2012), while others identified 6 internal barrier and 4 external barriers (Sajjad et al., 2019). Other studies categorised the barriers of SSCM implementation under 3 overarching themes, resources, lack of understanding and risk (Morali & Searcy, 2013). Others distinguished barriers using ISM.

2.5 Theories in literature

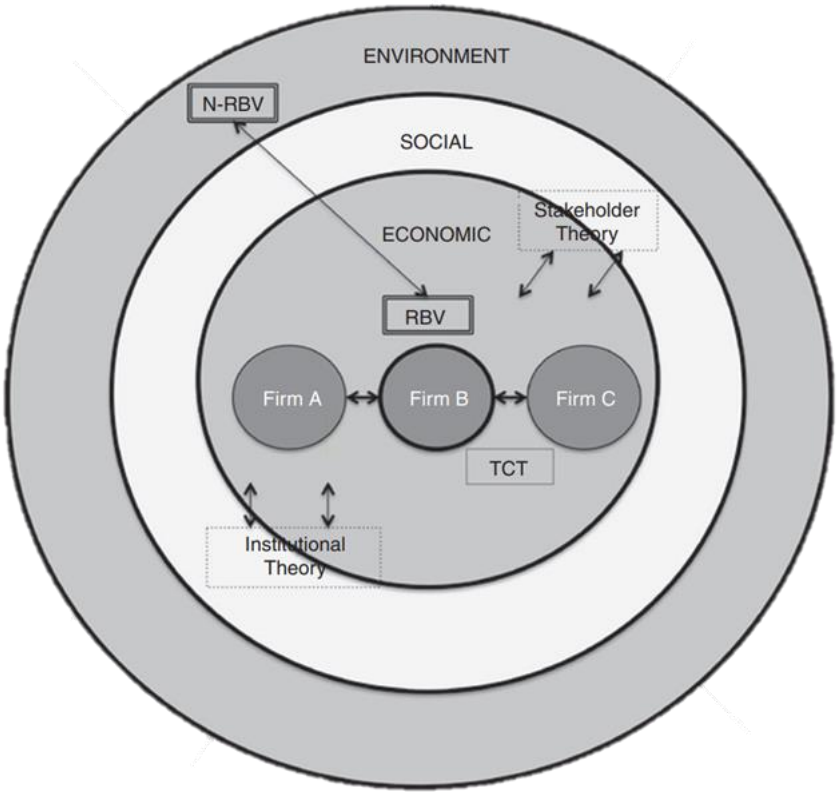
There has been an ongoing discussion among scholars regarding the level of theoretical adoption in the field of sustainable supply chain management (SSCM). Some argue that SSCM literature has not adequately embraced existing theories (Seuring and Muller, 2008; Carter and Easton, 2011; Ansari and Kant, 2017; Reefke and Sundaram, 2017). Gold et al. (2010) even suggests that the incorporation of theory into SSCM is still in its nascent stages.

Pagell and Shevchenko (2014) point out that current research often fails to comprehensively capture the integrated impact of sustainable supply chains. This limitation stems from a prevailing theoretical bias toward profit maximisation and economically advantageous practices (Montabon et al., 2016). Additionally, Sarkis et al. (2011) concur that there is a noticeable gap in the literature when it comes to reviewing and integrating theory within the realm of green supply chain management. While some

scholars have attempted to advance the development of theoretical foundations in this field, most have emphasised the potential for theories to further enrich SSCM (Montabon et al., 2016).

Although the concepts of green and sustainable have similarities and are used interchangeably by some scholars, the major difference is that sustainability should consider the future generation's needs. Thus, some of the theories that emerged in Green Supply Chain Management (GSCM) could be used in sustainable supply chain management; Some of these theories include complexity theory, information theory, institutional theory, resource-based view (RBV), resource dependence theory, social network theory, stakeholder theory and transaction cost economic theory (Sarkis et al., 2011; Johnsen, Miemczyk and Howard, 2017).

Figure 4: Conceptual Map of SSCM Theory



(Touboulic, Chicksand and Walker, 2014)

Using/importing existing theories to understand SSCM phenomena is convenient, but it comes with its own set of obstacles and limitations (Touboulic & Walker, 2014). The use of theories brought from other disciplines, for the use of a specific theoretical lens to SSCM research will shed light on certain aspects, dimensions and relationships while obscuring others (Touboulic & Walker, 2014). Scholars must pay particular attention to the theory's relevance and explanation as well as the phenomenon

under investigation (Amundson, 1998). Figure 4 illustrates the shortfalls of some theories when used as the theoretical lens in SSCM research. Table 2 demonstrates the most prominent theories used in SSCM research and explains the general concept of each theory and its applicability in the field of sustainable supply chain management.

Table 2: Theories that could be used to Further Develop the SSCM field.

Theory	General conceptualisation in sustainability
Complexity theory	As complexity increases it becomes more difficult to plan and predict actions. Supply chains are very complex by nature; complexity theory can reduce the uncertainty when trying to implement sustainable practices throughout the supply chain.
Information theory (asymmetry)	Managing the information between the industry and the consumers is vital for sustainability. As consumer awareness increases the industries must know more about its suppliers in order to keep the consumers' trust.
Institutional theory	External pressures are key to adopting sustainable practices. Organisations often adopt sustainable practices due to the influence of others, even without clear economic benefits.
Natural-Resource-based view	Proposed by Hart (1995), this theory builds on the RBV and emphasises sustainable development. Sustainability is crucial for ensuring the longevity of limited resources.
Resource dependence theory	This theory advocates for efficiency and long-term benefits in supply chains, encouraging a focus on sustainable practices that yield long-term advantages rather than short-term gains.
Social network theory	This theory advocates for efficiency and long-term benefits in supply chains, encouraging a focus on sustainable practices that yield long-term advantages rather than short-term gains.
Stakeholder theory	This theory addresses pressures from various stakeholders to mitigate negative impacts and enhance positive contributions, aligning with sustainable supply chain management amid globalisations.
Innovation diffusion	This theory can explain the varying adoption of sustainable practices among firms, highlighting factors influencing this divergence.
Transaction cost economics	While some scholars utilise TCE in SSCM, critiques argue that it primarily focuses on short-term effects, making it less suitable for a sustainability perspective that emphasises the long term.

A structured literature review of SSCM theories conducted by Touboulic, Chicksand and Walker (2014), highlight the predominance of a few imported macro theories such as RBV, NRBV, stakeholder theory and institutional theory in the field (Johnsen, 2017; Touboulic and Walker, 2015). Notably stakeholder theory is often combined with other perspectives to enrich understanding of SSCM The study conducted by (Johnsen, Miemczyk and Howard, 2017) on theories in sustainable purchasing and supply management found in the literature, confirms that stakeholder theory is the dominant theoretical perspective. Followed by resource-based view theory and natural resource-based view theory. However, it is crucial to note that institutional theory also plays a significant role in understanding how external pressures influence firms' adoption of sustainable practices. The study by Johnsen et al. did exclude the research published in Journals that were not included in the UK Association of Business Schools (ABS) Journal list, such as the Cleaner Production Journal which is one of the most highly active journals in the field of Sustainable/green supply chain management.

Papers with a clear theoretical perspective often combine two or three complementary perspectives, such as stakeholder and institutional theories or RBV and NRVB (Johnsen, 2017; Toubloulic & Walker, 2015). With a large portion of papers relying on little or no theory at all (Johnsen, 2017; Toubloulic & Walker, 2015). More information of the most common theories used in SSCM is presented in the following subsections.

2.5.1 Resource Based View Theory and Natural Resource Based View Theory

RBV and NRBV have been used in an array of studies and are becoming increasingly popular in the field of SSCM. Core competencies and dynamic capabilities, emphasise internal resources NRBV for on inter-organisational relationships as sources of sustained competitive advantage through differentiation, which can be gained via sustainable practices. Notably the adoption of RBV and NRBV often is influences by institutional pressures, highlighting the interconnectedness of these theories in the context of sustainability. NRBV resources differ from comparable sustainability frameworks of corporate social responsibility and the triple bottom line that prioritises sustainability over competitiveness (McDougall, Kristiansen and Rader, 2019).

2.5.2 Stakeholder Theory

The most dominant theoretical perspective in SSCM research is stakeholder theory. Stakeholder theory, which assesses the company's actions impacting internal and external stakeholders. CSR is the firm's responsibility to meet the expectations of its stakeholders. The appeal of stakeholder theory

comes from its versatility and ability to identify and prioritise conflicting demands for sustainable purchasing and supply management (Matos & Hall, 2007). Most SSCM paper underpinned with a stakeholder theory focus on how various stakeholders exert pressure direct and indirect to influence the firms to embrace sustainable supply chain practices (Touboulic, Chicksand and Walker, 2014).

Criticism of stakeholder theory lies in the limited consideration of how relationships between stakeholders are affected beyond power, legitimacy, and urgency. Most researchers use stakeholder theory along with other theories such as institutional theory (Touboulic, Chicksand and Walker, 2014) to compensate for the lack of in-depth explanations on the nature of a specific capability requirement.

2.5.3 Institutional theory

Institutional theory suggests that external environments influence firms' adoption of various practices, driven by regulatory, normative, and mimetic pressures (Roberts and Greenwood, 1997; Heugens and Lander, 2009). These pressures significantly shape organisational responses, often leading firms to adopt similar practices to maintain legitimacy within their social frameworks of norms, values, and expectations (Oliver, 1997; Meixell and Luoma, 2015).

Institutional theory explains that firms operate within a social framework of norms, values, and assumptions that define what is considered appropriate or acceptable economic behaviour (Oliver, 1997). Social limitations—such as norms, habits, and consumers—are crucial when organisations make economic decisions, alongside technological, informational, and financial factors. In this context, social obligation becomes a key source of influence on organisational structure and the adoption of innovative practices (Rogers *et al.*, 2007). From the perspective of institutional theory, most actions that an organisation takes may be explained as symbolic attempts to influence and maintain legitimacy perceptions among key stakeholders, rather than as purely rational efforts to improve efficiency (Zheng et al., 2015).

Mimetic pressures arise when organisations face uncertainty, often adopting practices from successful competitors to reduce the risks associated with innovation. This occurs in environments where organisational technologies are poorly understood, goals are ambiguous, or outcomes are unpredictable (DiMaggio and Powell, 1983). By mimicking firms that have successfully resolved similar challenges, companies aim to navigate uncertainty and reduce research or experimentation costs (Perez-Batres et al., 2012). Mimetic pressures are particularly evident when firms observe competitors' strategic success and attribute that success to their practices, leading to imitation as a strategy for achieving similar results (Sancha et al., 2015).

Normative pressures arise from societal expectations and professional standards, often transmitted through educational and professional networks, trade associations, and inter-organisational relationships (DiMaggio and Powell, 1983). These pressures encourage conformity to industry norms and shared values, ensuring firms align their practices with collective expectations from suppliers, labour unions, local communities, and NGOs (Girisaballa and Bhattacharya, 2016). Organisations comply with these expectations to maintain their legitimacy and social standing within the industry.

Coercive pressures stem from political and legal demands imposed by government regulations or other influential organisations, such as major customers or parent companies (DiMaggio and Powell, 1983). These pressures often manifest in the form of legislative requirements, directives, or policies related to sustainability and environmental management (Zhu and Sarkis, 2007). Coercive pressures can also come from key stakeholders that the firm depends on, such as large customers or investors, who may push for the adoption of sustainable practices to meet broader societal goals (Seuring and Müller, 2008).

Delmas and Pekovic (2018) identified regulatory, normative, and cognitive perspectives to explain why firms adopt ISO 14001 at different rates across countries. Delmas and Toffel (2004) question whether the institutional theory fully explains business strategy, by asking, "Why do organisations subject to the same level of institutional pressure pursue different strategies?". They suggest that discrepancies between the objective pressures that firms encounter and how these firms perceive and interpret those pressures can influence organisational responses. This notion is supported by Wiengarten, Pagell and Fynes (2013), they further elaborate on how these discrepancies can lead to varied organisational outcomes.

Recent literature suggests that external pressures alone may not be sufficient to explain the adoption of social sustainability practices (Marshall et al., 2015). While institutional theory has historically been used to explain the drivers behind adopting sustainability initiatives (Tate et al., 2011; Meehan and Bryde, 2015), recent studies argue that the organisational process that transforms external pressures into action also plays a critical role.

While theories such as institutional theory, stakeholder theory, and resource-based view provide critical insights into the drivers of SSCM, they fall short in addressing the temporal dynamics of sustainable practice adoption. Timing, as an underexplored variable, plays a significant role in shaping firms' responses to institutional pressures and enablers. Timing, as an underexplored variable, plays a significant role in shaping firms' responses to institutional pressures and enablers.

Building upon these theoretical foundations, this research proposes a conceptual framework that integrates the dynamics of institutional pressures, the timing of adoption, and enablers and barriers to SSCM. This framework addresses the gap in existing literature by exploring not only why firms adopt sustainable practices but also when and under what conditions these practices are implemented.

The interplay between stakeholder and institutional theories provides a foundation for understanding the complexities of sustainable supply chain management, which will be further explored in the proposed conceptual framework. The insights gained from stakeholder and institutional theories underscore the critical role of timing in the adoption of sustainable practices, which will be a focal point in the subsequent conceptual framework.

Institutional theory offers a comprehensive lens for understanding the external forces that influence firms' adoption of sustainable supply chain practices. It highlights how firms respond to a combination of mimetic, normative, and coercive pressures, balancing market conditions with societal expectations to maintain legitimacy. This theoretical framework is essential for examining the complexities of sustainable supply chain management, revealing how external pressures and internal processes interact to drive firms' strategic decisions (DiMaggio and Powell, 1983).

2.6 Conceptual framework

The delay in adopting sustainable supply chain management (SSCM) practices is a recurrent theme in contemporary literature, often attributed to the complex interplay of external pressures and internal dynamics. This chapter has highlighted how institutional pressures—coercive, normative, and mimetic—exert varying degrees of influence on firms' decisions to adopt sustainability practices. However, while these pressures create an impetus for change, they do not fully explain the temporal dimension of SSCM adoption. Firms often face delays in decision-making due to internal constraints, such as resource limitations, financial concerns, or a lack of awareness and feasibility.

This critical gap underscores the importance of investigating the *timing* of adoption, as it mediates how firms respond to these pressures. Timing is not simply a passive factor but an active mediator that shapes the trajectory of adoption decisions. Research has shown that while many firms recognise the value of SSCM practices, the actual implementation is often delayed due to various organisational, financial, and perceptual barriers. This delay is particularly pronounced in environments with ambiguous regulatory frameworks or insufficient institutional support (Marshall et al., 2015; Rogers et al., 2007).

The literature also points to the need for a comprehensive framework that captures both the external pressures and the internal decision-making processes that influence SSCM adoption. The current body of knowledge predominantly focuses on identifying barriers and enablers in a static manner, overlooking the evolving nature of these factors over time. As firms encounter shifting external pressures and internal dynamics, the timing of adoption becomes a crucial element in understanding the full scope of SSCM implementation.

Building upon insights gained from the literature review, this section presents a conceptual framework that integrates the dynamics of institutional pressures, the timing of adoption, and the enablers and barriers to SSCM. The framework is informed by institutional theory, which suggests that external environments significantly influence firms' adoption of various practices through three primary pressures: coercive, normative, and mimetic (Roberts and Greenwood, 1997; Heugens and Lander, 2009). This framework is suitable for qualitative research, as it allows for an in-depth exploration of the contextual and processual factors that shape the timing of sustainable supply chain practices adoption.

Integration of Theoretical Perspectives

The framework synthesises institutional theory, highlighting how regulatory, normative, and mimetic pressures shape organisational responses to sustainability initiatives. This integration allows for a detailed understanding of why firms adopt sustainable practices at different rates and under varying conditions. Institutional theory posits that firms operate within a social framework defined by norms, values, and expectations (Oliver, 1997). These social limitations, alongside technological and financial factors, play a crucial role in economic decision-making. Thus, social obligations significantly influence organisational structures and the adoption of innovative practices (Rogers et al., 2007).

2.6.1 Emphasis on Timing

Recognising timing as a critical variable, the framework explores how the temporal dynamics of adoption influence organisational responses to external pressures. Institutional theory suggests that firms often engage in symbolic actions aimed at maintaining legitimacy among stakeholders rather than making purely rational decisions for efficiency (Zheng et al., 2015). By addressing the 'why' and 'when' of sustainable practices implementation through interviews, case studies, and other methods that capture detailed, contextual data. By addressing these questions, this research seeks to fill a significant gap in the existing literature, particularly regarding the interplay between institutional pressures and the timing of adoption decisions. of adoption decisions.

2.6.2 Enablers and Barriers

The framework incorporates factors that facilitate or hinder the adoption of sustainable practices, providing a comprehensive view of the internal and external influences on SSCM. Recent literature indicates that while external pressures are essential, they alone do not fully explain the adoption of sustainability practices (Marshall et al., 2015). The organisational processes that transform these pressures into action also play a critical role. Internal factors, such as resource availability and organisational culture, directly interact with institutional pressures and timing, shaping how firms respond to sustainability challenges. Qualitative research, particularly case studies or interviews, can provide insight into how these enablers and barriers manifest in specific contexts.

2.6.3 Supporting Propositions:

Proposition 1: Financial Incentives

Firms are more likely to adopt sustainable practices within their supply chain when they perceive greater financial incentives and benefits, such as cost savings, improved reputation, or competitive advantage, in comparison to traditional unsustainable practices. Timing influences this decision, as firms may delay adoption until the financial advantages become significant enough to justify the change.

Proposition 2: Risk Assessment

Firms are inclined to adopt sustainable practices when they assess that the risks associated with maintaining an unsustainable supply chain, such as reputational risks, operational risks, and regulatory risks, outweigh the potential risks of transitioning to a sustainable supply chain. Timing is critical; firms may postpone risk assessments until external pressures compel them to reconsider their current practices.

Proposition 3: Awareness and Knowledge

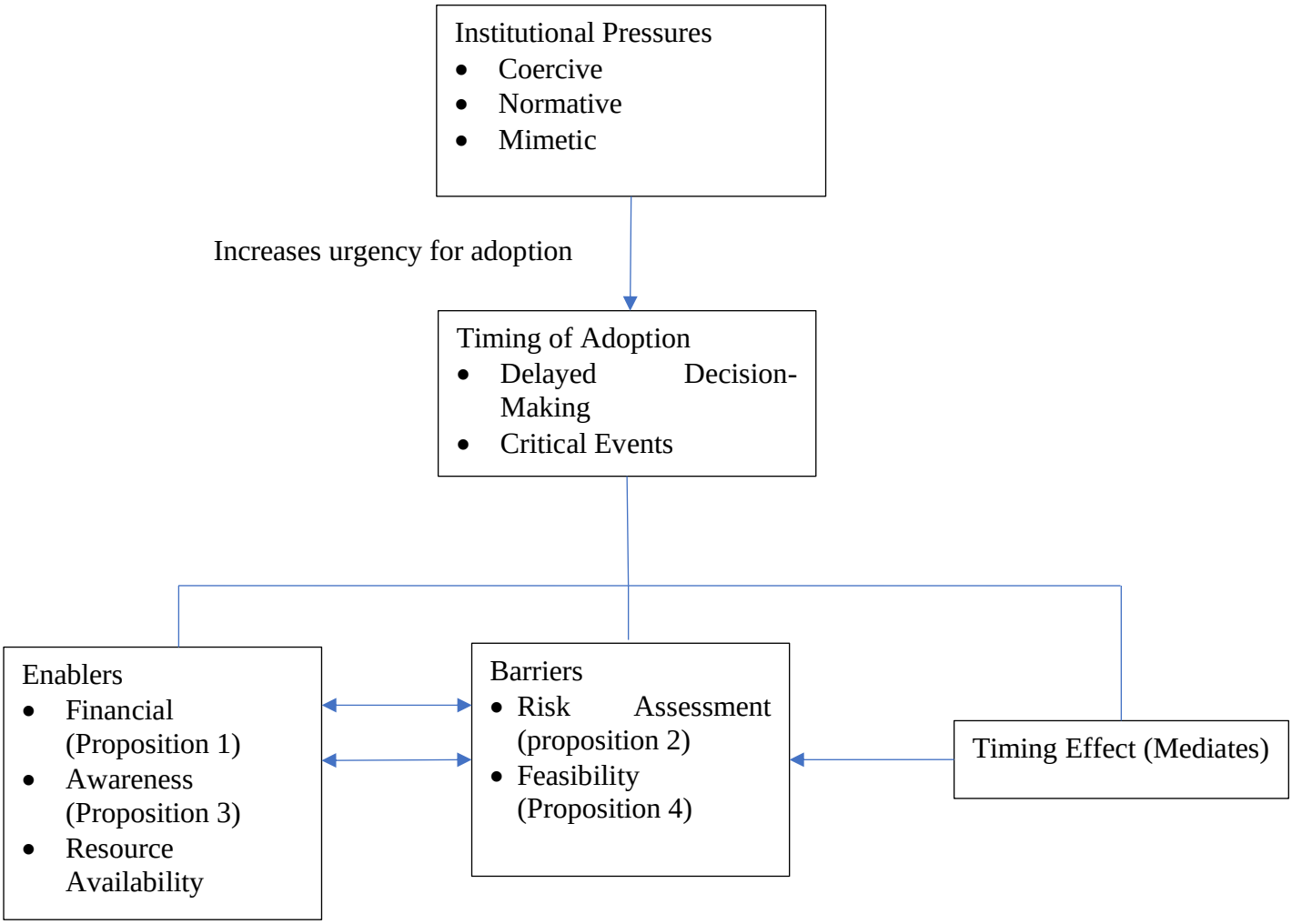
Delays in adopting sustainable practices can arise from insufficient awareness or knowledge about their existence and benefits. Timing plays a crucial role here, as delays in obtaining information can prolong decision-making processes.

Proposition 4: Feasibility and Availability

Firms may postpone the adoption of sustainable supply chain practices because they perceive a lack of availability or feasibility of these practices. Concerns about disrupting existing supplier relationships and potential adverse economic consequences may lead to delays in adoption. Timing

affects this perception, as firms might wait for more robust evidence of feasibility before committing to changes.

Figure 5: Conceptual Framework Model



2.6.3.1 Explanation of each component

Institutional Pressures: These are external forces that create urgency or inertia in SSCM adoption decisions. Coercive pressures from regulatory bodies can accelerate adoption, while weak normative or mimetic pressures may lead to procrastination.

Timing of Adoption: Timing influences when firms recognise and act upon external pressures. Organisations may delay adoption until they perceive these pressures as unavoidable or until internal conditions (resources, knowledge, readiness) align with external demands.

Enablers and Barriers: Internal factors such as financial incentives, resource availability, and organisational culture either support or hinder the adoption of SSCM practices. These elements interact with institutional pressures and timing, shaping the trajectory of SSCM initiatives.

2.6.3.2 Relationships Among Components

Institutional Pressures → Timing of Adoption: Strong coercive pressures can accelerate adoption, while weak pressures may lead to delays.

Enablers and Barriers ↔ Timing of Adoption: Positive enablers (e.g., incentives) can shorten the evaluation period, whereas barriers (e.g., lack of resources) prolong it.

Mediating Role of Timing: Timing mediates the relationship between institutional pressures and SSCM adoption, determining how firms respond to both internal and external influences.

2.6.4 Implications for Research and Practice

By framing the adoption of sustainable practices within this comprehensive context, the proposed framework contributes to academic discourse and provides practical implications for firms navigating the complexities of SSCM.

2.6.4.1 Theoretical Implications

The urgency of adopting SSCM practices is increasingly critical due to escalating environmental challenges and regulatory scrutiny. While existing literature primarily examines the types of institutional pressures or the enablers and barriers to SSCM adoption, a significant gap persists in understanding how these pressures interact with the timing of adoption decisions.

A critical analysis reveals that while institutional pressures—coercive, normative, and mimetic—shape organisational behaviour, the timing of these decisions remains underexplored. Traditional views often treat SSCM adoption as a binary decision, neglecting the complex processes and timelines organisations navigate. This research aims to offer a fresh perspective linking institutional theory with the dynamic timing of SSCM adoption. Qualitative research will allow for a deeper understanding of the processes and factors influencing these decisions, filling the gap in the literature.

The proposed framework delineates the interaction between institutional pressures and timing in SSCM adoption decisions, addressing two core research questions:

- RQ1: What are the underlying reasons for firms' delay in adopting sustainable practices within their supply chain?

- RQ2: What factors influence the timing of the adoption of sustainable supply chain practices?

2.7 Chapter Summary

In summary, this chapter began by tracing the roots and defining sustainability. It then delved into the drivers and barriers identified in the literature, shedding light on the motivations compelling firms to embrace Sustainable Supply Chain Management (SSCM) practices.

While the field of sustainability in Supply Chain Management (SCM) is gradually evolving, with a growing emphasis on the Triple Bottom Line (TBL) and its three dimensions (social, economic, and environmental), there remains an essential need for further research. Current research disproportionately concentrates on environmental and economic impacts, often overlooking aspects like production planning, scheduling, inventory management, and reverse logistics (Taticchi, Tonelli and Pasqualino, 2013).

Furthermore, there is a noticeable geographic bias in SSCM studies, primarily focusing on firms in the USA, UK, and Germany (Saeed and Kersten, 2019), leaving a gap in research concerning developing countries (Hong et al., 2017; Jia et al., 2008). In developing nations, there's an explicit need to consider the supplier's perspective (Zorzini *et al.*, 2015).

The literature also reveals gaps in empirical and theoretical understanding of barriers within each dimension of the TBL. Although there has been research on the influence of internal and external drivers and barriers in SSCM (Quariguasi Frota Neto *et al.*, 2010), a comprehensive understanding of both practical and theoretical barriers remains limited (Sajjad et al., 2015). The literature often examines sustainable practices at a macro level, and there's a demand for more micro-level theories, focusing on individual SCM or sustainability aspects, with limited integration in scholarly papers (Khan *et al.*, 2021)

Pagell and Shevchenko, (2014) highlighted that current research falls short in capturing the integrated impact of sustainable supply chains, overlooking trade-offs and the influence of radical innovation. Research tends to favour profit maximisation and economically beneficial practices (Montabon, Pagell and Wu, 2016). A notable gap involves the lack of recognition of sustainable practices by many firms. While some companies have yet to adopt any sustainable practices, others that have embraced sustainability are often doing so insufficiently. Although some industry-specific frameworks have been developed, there is no established generic framework.

Peer pressure as a driver for sustainable supply chain practices is an underexplored area in the literature, and it deserves more attention to provide a holistic perspective on drivers for corporate sustainability. Recognising the role of peer pressure and social norms in shaping subjective norms and environmental behaviour (Anthony Swaim *et al.*, 2016) is an area that remains largely un-investigated.

Reefke and Sundaram (2017) pointed out that one of the most significant gaps is the lack of research into the environmental and social effects of supply chains and their value provision. There's also a dearth of studies that comprehensively integrate all three dimensions of sustainable supply chain management in emerging economies (Mani, Gunasekaran and Delgado, 2018). The interrelated aspects of these three sustainability dimensions need further exploration (Seuring, 2013). Additionally, Markman and Krause (2016) highlighted the absence of research simultaneously analysing all three dimensions of sustainability (economic, environmental, and social) under a single framework.

In conclusion, this research is poised to fill these crucial gaps in the literature by investigating the maturity of sustainable practices within firms, the motivations driving their adoption, and the factors contributing to delays in implementation. Additionally, it aims to contribute to the development of the theoretical foundations supporting sustainable supply chain management, an area currently marked by insufficient theoretical knowledge and limited practical application (Reefke and Sundaram, 2017). This research endeavours to uncover how individual firms respond to diverse pressures and seeks to unveil the motivations influencing the timing of adopting sustainable practices. This research endeavours to uncover how individual firms respond to diverse pressures and seeks to unveil the motivations influencing the timing of adopting sustainable practices.

This chapter has provided a comprehensive review of the literature on institutional pressures, timing, and enablers and barriers to SSCM adoption. It highlights significant gaps, particularly the underexplored relationship between institutional pressures and the timing of adoption decisions. The developed conceptual framework addresses these gaps by offering an integrated approach that considers timing as a critical factor in SSCM adoption. By linking institutional pressures to organisational decision-making through the lens of timing, this framework sets the stage for the research methodology and empirical analysis in the following chapters.

3 Chapter III-Methodology

3.1 Introduction

In the previous chapter, a comprehensive literature review was carried out on the drivers, barriers, and motivators of SSCM, as well as theories that have been explored in the past. The purpose of this chapter is to introduce the research methodology of this qualitative exploratory case study on the adoption of sustainable supply chain practices. The qualitative approach was selected to explore why firms choose to adopt sustainable practices; develop theory from the data and gain a deeper understanding of the timing and motivation behind adopting sustainable supply chain practices. The applicability and justification for selecting the case study research strategy and the pragmatist approach for this study are discussed in-depth in this chapter.

This chapter begins with recapping the research aim and question followed by a discussion on the research philosophies prominently used in business management research, this will assist in choosing the correct ontology and epistemology for this thesis. SSCM is a very complex phenomenon, thus the pragmatist philosophy and the justification for it is to further explore what motivates the timing of SC to adopt sustainable practices and what delays the adoption of SSCM practices. The pragmatic paradigm and the inductive approach are linked to theory building.

Next is the heart of the chapter, the research design. The research design includes the rationale and justification for the chosen approach compared to other available approaches. Qualitative inductive research was deemed as the appropriate approach as it aligns with the pragmatic paradigm. By applying this approach, one can gain a deeper understanding of the barriers, motives, and enablers faced by SSC. This approach is distinguished for its ability to provide an in-depth understanding of complex phenomena.

The following section describes and justifies the selected research strategy for this thesis. This case study strategy is presented in detail under the research strategy subsection. The advantages and disadvantages of this research strategy are also presented. This section describes the selection process for the cases and the data collection strategy. Primary data came from 3 cases in the form of interviews and observations, which enabled the in-depth understanding of each firm's SSCM practices. Secondary data was used to support the data from interviews to gain a more holistic understanding of motivation, drivers, and barriers faced by the firms when adopting SSCM practices. The data collection strategy

is followed by the context of each case and the analytical approach. The chapter will conclude with the limitations and obstacles faced by the researcher.

The chapter will end by discussing the selection of thematic analysis as the appropriate method and will conclude with the limitations, reliability, and validity of this study.

3.1.1.1 Research Aim

The research aims to develop a conceptual theory regarding the delay in adopting sustainable supply chain practices for future empirical testing. This exploratory study seeks to address the unclear motivations behind firms' adoption of sustainable practices in the ever-evolving landscape of sustainability (Paulraj, Chen and Blome, 2017a). Conflicting views exist within the literature, with some suggesting that firms engage in sustainable practices as mere ceremonial gestures (Boiral, 2007), while others argue that they do so to conform to social norms (Sharma, Yngard and Lin, 2009). Additionally, some firms take a reactive approach, attempting to become less unsustainable (Shevchenko, Lévesque and Pagell, 2016). Consequently, this thesis aims to shed light on the motivations and timing of adopting sustainable practices, bridging gaps in the existing literature.

The research questions guiding this study are as follows: RQ1: Why do firms delay the adoption of sustainable practices within their supply chain? RQ2: What motivates the timing of the adoption of sustainable supply chain practices?

While Chapter Two of this thesis has explored the drivers, motivators, barriers, and enablers of SSCM practices, it has revealed inconsistencies and contradictions in the findings. The first question seeks to uncover the reasons for firms delaying the adoption of SSCM practices, providing insights into this aspect of the adoption process. Simultaneously, the second question delves into firms' practices to elucidate the motivations that drive them to adopt specific economic, environmental, and socially sustainable practices within their supply chain. This research endeavours to bring clarity to these vital aspects of SSCM adoption.

3.2 Ontological and Epistemological Views

The term "research philosophy" pertains to a system of beliefs and assumptions guiding the advancement of knowledge. This philosophical stance plays a crucial role in shaping the research design and understanding its inherent limitations. Research philosophy encompasses the researcher's ontological, epistemological, and methodological views, which, in turn, significantly influence the

research outcomes (Alvesson and Sköldberg, 2009; Bryman and Bell, 2007; Easterby-Smith et al., 2012; Gill and Johnson, 2010).

In this context, ontology is defined as the "branch of philosophy dealing with the essence of phenomena and the nature of their existence" (Gill and Johnson, 2010: p. 200). Epistemology is defined as the "study of the nature of knowledge and justification" (Schwandt, 2001, p.71). Methodology, on the other hand, refers to the "theory and analysis of how research should proceed" (Harding 1987, p.2).

Epistemological assumptions delineate what qualifies as knowledge, ontological assumptions address the existence of multiple realities or a single reality, and axiological assumptions relate to the extent and manner in which our beliefs influence the research (Johnson and Duberley, 2000). These assumptions not only shape how we formulate research questions but also dictate the chosen strategies and the interpretation of the findings (Crotty, 1998; Alvesson & Skoldberg, 2009; Easterby-Smith et al., 2012).

Understanding the various beliefs and philosophical stances within the field of study is crucial, as they play a pivotal role in knowledge development. While some may downplay the significance of the researcher's philosophical views, these views profoundly affect the process of knowledge creation within a specific domain (Johnson and Duberley, 2000).

(Pedersen, Gwozdz and Hvass, 2018) argue that the philosophical underpinnings of research in SSCM greatly enhance its capacity to comprehend the intricacies of issues. A well-considered set of philosophical assumptions forms a robust research philosophy that guides methodological decisions, research strategies, data collection techniques, and analytical procedures (Carter and Little, 2007).

Conscious or not, researchers make various assumptions at every stage of their research, shaping the entire project (Burrell and Morgan, 1979; Johnson and Duberley, 2000). Scrutinising these philosophical beliefs enables the development of a more coherent research project, where all elements align seamlessly. This subsection begins by elucidating the broader understanding of epistemological and ontological beliefs in the business management literature, concluding with the researcher's own philosophical beliefs and reflexivity, addressing their implications for this research.

3.2.1 Ontology

Ontology examines the nature of reality and whether there is only one true reality despite social actors involved, or whether social actors create that reality and thus multiple realities exist (Sobh and Perry, 2006). (Oral, 2009) underscores that ontology in SCCM plays a major role in directing the type of

knowledge that needs to be gained. The ontological debate centralises around whether social phenomena have a reality external to social actors; or whether a social phenomenon should be considered as multiple social constructions built up from the actions and perceptions of social actors (Bryman & Bell, 2015; Easterby-Smith et al., 2008; Fleetwood, 2005; Oral, 2009). Ontology is often viewed on a spectrum of two opposite positions: objectivism and subjectivism (Morgan and Smircich, 1980).

Objectivists argue that there is a single social reality that exists outside the influence of social actors such as the researcher and participants (Guba and Lincoln, 1998; Özbilgin, et. al, 2005; Kumar, 2008). In contrast, subjectivists believe that social reality is socially constructed through interpretations and therefore subjective and with multiple realities (Collies and Hussey, 2009). (Saunders and Bezzina, 2015) view and regard reality as a social construct where researchers need to interpret participants' opinions in their social context to get to the essence of what they mean and create and claim new factual knowledge.

3.2.2 Epistemology

Epistemology is the study of how knowledge is gained, what is regarded as knowledge, and in the broader sense, the nature of knowledge (Saunders, Lewis and Thornhill, 2007). Epistemology looks at the connection between the researched topic and the researcher. There are two traditional philosophical paradigms; positivism which is associated with objectivism and interpretivism which is associated with subjectivism (Easterby-Smith et al., 2008). Classification of primary epistemological approaches varies; researchers identify anywhere between two to five major paradigms, while others describe an epistemological continuum with positivism at one end and interpretivism at the other (Collis and Hussey, 2009). The five most relevant philosophies in business and management are positivism, critical realism, interpretivism, postmodernism, and pragmatism (Easterby-Smith, Lyles and Tsang, 2008). Each is explained below.

3.2.3 Positivism

Positivists argue that reality is an objective truth that is observable and measurable, with law-like generalisations (Astley, 1985). To conduct research from a positivist philosophy, the researchers must maintain a detached and neutral standpoint while conducting their research, to avoid influencing the findings. This philosophy was developed in the early twentieth century by scientists named the Vienna Circle, promising unambiguous and accurate knowledge (Crotty, 1998; Wicks & Freeman, 1998). Positivists focus on a strictly scientific empiricist method designed to yield data and facts uninfluenced by human interpretation or bias (Saunders et al., 2007). Therefore, they generally prefer a quantitative

approach, with statistical and numerical data to develop an objective and reliable, and generalisable conclusion from which the sample was drawn (Collis and Hussey, 2009).

3.2.4 Interpretivism & Constructivism

Interpretivism developed as a critique of positivism from a subjectivist perspective in early and mid-20th-century Europe. Interpretivism underscores that human beings and their social worlds are unlike some physical phenomena observed in the natural sciences (Crotty, 1998). This difference is due to humans' ability to deduce meaning, therefore presenting various social realities, rather than one objective truth (Morgan and Smircich, 1980; Orlitzky, Schmidt and Rynes, 2003). Humans engage with the numerous variables that construct each social reality, from cultural background to subjective perception and analysis and place importance on rich insights into humanity.

The interpretivism worldview notably produced the constructivist philosophy. Strongly rooted in the same worldview; accounting for the role of human emotions and perceptions in the construction of the research and observed phenomenon (Holden and Lynch, 2004). Constructivism usually aims to develop theories or expand on existing theories rather than test existing theories, such data is best derived from a qualitative methodology (Bell, Bryman and Harley, 2022).

The interpretivist approach aims to create new, deeper understanding, and interpretations of social worlds and contexts. For business and management researchers, this could include studying a corporation from the various experiences and perspectives of its stakeholders. Studying businesses through this approach allows the emergence of the multiple realities that exist and organisational roles.

Interpretivists' research design aims to account for complexities by collecting what is relevant to their studies. Interpretivists capture what is beyond empirical by emphasising different viewpoints, languages, culture, and history. This methodology interrupts the illusion of a uniform reality (Crotty, 1998) and provides alternative interpretations of the same phenomenon. This approach is therefore explicitly subjective due to its focus on interpretations (Morgan and Smircich, 1980). An axiological implication is that researchers realise that their data and perspectives contribute to and position their research (Starks and Brown Trinidad, 2007).

3.2.5 Critical Realism

Critical realism emerged in the late twentieth century by Roy Bhaskar. The philosophy is within the spectrum of positivism, however, is far less extreme. The realism paradigm's ontological assumption is that there is a real world that exists independently of human perception and construction, however, the interaction between social phenomena and reality is important. Critical realism explains that the

realisation and experience of the world only provide an approximation of what the world truly is due to the limitations of the sensory apparatus and the active role we play in designing our reality.

Critical realism recognises the role of interpretation but also identifies that there is an outside and independent reality that exists beyond interpretation (Ackroyd and Fleetwood, 2005). This is done by first underpinning the contributions of interpretation to the data and then beginning to study what can be identified from the underlying 'actual' reality (Reed, 2008). Further, what is studied is not the entirety of the 'actual' reality (Easton, 2010) and knowledge about reality is embedded in a specific time, with socio-cultural context. This implies that critical realist notions of causality cannot be reduced to statistical correlations and quantitative strategies (Reed, 2008).

3.2.6 Postmodernism

Postmodernism philosophy is on the interpretivism side of the positivism-interpretivism continuum. Emerging in the twentieth century, it underscored the position of language; recognising its partiality and selectiveness (Parker, 1995). Postmodernism also emphasises the importance of identifying the impact of power relations. Postmodernists highlight gaps and unexplored information, as a method to address and challenge widely accepted approaches to thinking and knowledge (Kilduff and Mehra, 1997). Further, a postmodernist researching the field of organisational management would search for marginalised and unrecognised views, and the power relations tied to the predominantly accepted views (Townley, 1994). Postmodernists must be aware of their own power relations and the impact it has on their research approach (Cunliffe, 2003).

3.2.7 Pragmatism

Pragmatism originated in the late-nineteenth century and claims philosophy is to serve society, therefore principles must support action (Keleman and Rumens, 2008). It places a societal context when considering theories, concepts, ideas, hypotheses, and research findings. Pragmatism as a philosophy argues that relying solely on positivism or interpretivism to determine the reality/truth of practical research isn't possible (Kivunja and Kuyini, 2017). It adopts both positivist and interpretivist stances to contribute practical solutions to research questions (Saunders et al., 2016; Carson et al., 2001).

This philosophy recognises that there will always be missing data, however, the aim is to utilise a technique that allows the gathering of reliable and relevant data, regardless of what may be missing (Keleman and Rumens, 2008). Their interpretivist position contributes to a multiple reality worldview, recognising that there will always be missing data therefore never achieving the whole image.

Furthermore, the purpose is to move away from abstract outcomes, and towards finding resolutions and producing practical solutions that directly enable and better inform practices and advance research (Elkjaer and Simpson, 2011).

Pragmatism has become more favoured in the field of organisational research, due to its feasible findings (Visser, 2019). Critical realist scholars are concerned that such a stance may further contribute to positivist and managerial tendencies that focus on profit and productivity (e.g., (Painter-Morland and ten Bos, 2016). Others argue that pragmatism widely considers the interests of stakeholders of all levels such as the employees, clients, and managers, in addition to the role of environmental factors (e.g., Freeman, 1984).

The following sections will go over four phases that were followed in designing, carrying out the research and finally analysing the data gathered. The initial phase was defining the philosophical stance of the research. The second phase was the pre-field phase, where the research considered whether a case study approach is suitable for the research. And the last phase is the data analysis choices made for this study.

3.3 The philosophical stance of this research

The previous subsections discussed the major ontological and epistemological assumptions seen in the business and management literature. This section will discuss the philosophical underpinnings of this research. Each of the positivism, constructivism, critical theory, and realism paradigms were considered in deciding the appropriate philosophy for the method, and strategy to follow. Summarised in the table below are Philosophical Paradigms (Healy and Perry, 2000), each was carefully considered. The selected philosophical stance for this study is Pragmatism.

Table 3: Philosophical Paradigms

Element	Positivism	Critical Theory	Constructivism	Realism	Pragmatism
Ontology	Reality is real and apprehensible.	"Virtual" reality is shaped by social, economic, ethnic, political, cultural and gender values over time.	Multiple local and specific "constructed" realities.	Reality is "real" but only imperfectly and probabilistically apprehensible.	Stays clear of the nature of truth/reality focus on practical understanding of real-world problems.
Epistemology	Objectivist: Findings are true.	Subjectivist: Value mediated findings.	Subjectivist: Created findings.	Modified objectivist: Findings are probably true.	Objectivist in terms of process, and subjectivist view in terms of findings.
Methodology	Experiments/surveys : verification of hypotheses, chiefly quantitative methods.	Dialogic/dialectical: Researcher is a "transformative intellectual" who changes the social world in which participants live.	Hermeneutical/dialectical: Researcher is a "passionate participant" within the world being investigated.	Case studies/ convergent interviewing: Triangulation interpretation of research issues by using qualitative & some quantitative methods such as structural equation modelling.	Mixed or multiple method design, qualitative and/or quantitative.
Pros	Generalisable; quantitative more reliable.	Social change Understands how communication can oppress.	Knowledge is built 'constructed'.	Emphasis practical knowledge.	Creates room for the exploring how individual experience, knowing, & acting are shaped through social interaction.
Cons	Doesn't provide in-depth data; can't gain understanding to the reason.	Difficult to apply; rationalisations can be narrow and oppressive.	Lack of structure; very subjective.	Perceived as having a negative bias.	Perceived lack of both theoretical and philosophical rigour.

The literature review chapter underscored the intricate nature of sustainability as a concept. A glance at Table 3 in the literature review chapter reveals the multitude of definitions for sustainable supply chains within the literature. Walker & Jones (2012) aptly argue that the complexity of sustainability arises from diverse understandings and motivations for developing SSC. Burgess, (2007) conducted a structured literature review of SCM publications and found that positivism is the dominant approach in SCM research. This prevalence of positivism has resulted in gaps in reflexive writing and a lack of plurality, issues that may only be effectively addressed by adopting alternative paradigmatic stances (Voss et al., 2002).

The Literature Review Chapter also revealed a lack of comprehension regarding the timing and motivations behind firms' adoption of SSCM practices. It identified a collection of barriers and enablers related to SSCM practices, with mixed findings. Different interpretations of sustainable supply chain management and varying understandings of sustainability contribute to discrepancies among social actors. These discrepancies can significantly impact the perceptions and interactions of each social actor (Saunders et al., 2012).

In this context, pragmatism offers a practical approach for researchers to focus on finding the best solutions to address their research questions (Lamont and Swidler, 2014). Pragmatism emphasises continuity, structure, and a diligent process. The research questions—'Why do firms delay adopting sustainable practices within their supply chain?' and 'What motivates the timing of adoption of sustainable supply chain practices?'—are of paramount importance. Pragmatism seeks to strike a balance between philosophical dogmatism and scepticism to find practical solutions (Onwuegbuzie, Johnson and Turner, 2007). It allows researchers to access more than mere words or numbers, converging power, identity, meaning-making practices, and interpretations.

One of the key advantages of pragmatism is its capacity to enable researchers to make deliberate choices, fostering reflexivity and reflection. The researcher selected the pragmatic stance due to its practicality and flexibility in addressing the research question. While it's noted that pragmatic research may be criticised for a perceived lack of philosophical and theoretical rigor, some scholars argue that the credibility and rigor of pragmatic research stem from the consistency between methodology and method, research strategy, and analytical lens(Hodkinson and Hodkinson, 2004).

The researcher identifies as a pragmatic constructivist, focusing on investigating the motivation and timing of firms in adopting sustainable supply chain management practices. This approach recognises

the role of social actors while asserting the importance of structure and process (Merriam, 2009). Processes that involve analysis, whether thematic, descriptive, or content analysis, as well as triangulation, are integral to ensuring data rigour and quality, thereby enhancing reliability and validity. The methods of data collection and analysis are meticulously organised, detailed, and well-documented (Merriam, 2009). This structured approach to data interpretation and management will be expounded upon in the forthcoming research design section.

3.4 Research Design

In this section the researcher explains and justifies in detail the research design choices. One definition of research design is that it is the overall strategy and logical structure that a researcher follows when conducting their research (Creswell, 2014). According to Yin (2018), the research design depends on the type of data needed to fulfil the research aim. The research design aligns the research questions and philosophical choices with the type of data. The identification of the study aims, research methodologies, strategy, and time horizon creates the structure for the researcher to answer their research questions (Saunders et al., 2009).

There are three established methodologies in academia: qualitative approach, quantitative approach, and mixed methodology (Jogulu and Pansiri, 2011). A thorough understanding of the various methodological approaches will assist the researcher in selecting the approach with the pragmatic nature of this study. However, the choice of methodology relies on the ability of each approach to answer the research aim and objectives (Widodo, 2014). The research philosophy will influence the selection of the research design as well (Creswell, 2014). The next section will provide the researchers' understanding of the various sections, before selecting the approach followed for this research.

3.4.1 Qualitative and Quantitative Approaches

Commonly the quantitative approach is selected when researchers intend to understand or explain the relationships between variables (Creswell, 2003), or if the research seeks to validate a concept by using numbers. A qualitative approach is more effective when the study aims to explore or explain a phenomenon within a particular setting. Further, research that aims to address issue areas such as culture, perception, reasoning, and theory development would go with qualitative methodology. A mixed-method approach, on the other hand, is usually used to triangulate the results of research by merging both quantitative and qualitative approaches (Jack and Raturi, 2006).

The quantitative methodology is defined by using numbers and statistics to test and understand relationships between variables (Creswell, 2014). The quantitative approach utilises vast amounts of

data and statistical analysis to find relationships between variables (Ponterotto, 2005). One advantage of quantitative research is that vast amounts of data allow for the generalisability of findings and replicability of the study by other scholars (Creswell, 2014, p.4). Another advantage is clear standards and structure when it comes to data collection and analysis (Pratt, 2008). One drawback of the quantitative approach is that researchers may miss the rationale for participants' responses to a phenomenon and are unable to gain the in-depth understanding needed for generating theory. Thus, the quantitative approach is great for theory testing not for theory generation.

Unlike quantitative research, qualitative research is defined by narration instead of numbers, this leads to greater depth in understanding of phenomena/issues (Creswell, 2014). It provides an effective way to gain insight into each social actor's personal experience, and the subjective reality related to the phenomena, which allows for theory building (Bricki & Green, 2007). The criticism of the qualitative approach is the small sample size does not produce generalisable and objective findings (Bricki and Green, 2007; Saunders, Lewis and Thornhill, 2009).

The mixed methodology uses both numbers and narratives, integrating the quantitative and qualitative methods to explore a phenomenon (Creswell, 2014). It is usually used to test existing theories/models (Thomas & Magilvy, 2011). One of the advantages of this approach is the ability to triangulate and validate findings. However, a researcher using this approach needs to excel at both quantitative and qualitative skills (Creswell, 2014). Some criticism of this approach is that it is time-consuming and expensive to implement.

The research questions for this study emphasise the importance of investigating the intricacies of the forces that motivate firms to adopt sustainable supply chain practices, and why firms choose to delay adopting some sustainable practices. In addition, there is a gap particularly in the social dimension of SSCM in part due to the challenge of quantifying it. Thus, qualitative research was the most appropriate approach for this study.

3.4.2 Qualitative Approach Justification

The principle of qualitative research is based on understanding various interpretations of reality at a particular point in time, within a specific context. A qualitative study intends to explore the processes and meanings of phonemes that have not been measured, and ‘the why’ behind people’s thoughts and feelings that could affect their behaviour. This approach is utilised for new insight and interpretations, rather than hypothesis testing.

The qualitative approach allows the researcher to clarify the various factors and complexities of sustainable supply chain management without predetermining the variables (Syed, 2012). The qualitative approach when using a semi-structured interview approach provides flexibility so the researcher can interact with the stakeholder's experience by modifying questions as needed. That fluidity and depth in response to inquiries are not possible in a quantitative approach.

A fundamental concern of the qualitative research approach is persuading the audience of the importance of the research, and why the selected approach is most suitable. This research serves several purposes. Firstly, the literature exploring the field of SSCM is limited in general, secondly, it provides insight into why firms delay adopting sustainable practices within their supply chain, and thirdly, it investigates the triggers and motives for firms to adopt SSCM. Several scholars have called for more theory development of sustainability and supply chain literature (Brandenburg *et al.*, 2014; Touboulic and Walker, 2015) This study focuses on advancing knowledge on a phenomenon where there is relatively little research (Gold, Seuring and Beske, 2010). The need for theory development in the domain of sustainable supply chain management is the reason for utilising the qualitative approach for this study.

Another criticism of the qualitative approach is the lack of generalisability of findings; however, the aim of this study is not generalisability of findings. As previously explained, the aim is to conduct an in-depth exploration of SSCM practices and assist in building knowledge rather than validating theories (Thomas and Magilvy, 2011). Qualitative data and analysis are the heavily descriptive foundation that allows new theoretical explanations to surface (Eisenhardt et al., 2016). Various factors influence the adoption of sustainable practices within the supply chains, and the most effective approach to investigate this developing field is the qualitative approach. Likewise, this approach is ideal for the pragmatic philosophical methodology with various fields utilising this combination (Clarke and Visser, 2019). The next research design choice is whether a deductive or an inductive approach is suitable for the data collection and analysis. This will be discussed in the following subsection.

3.4.3 Research approach: Inductive vs Deductive

There are three main approaches to research, inductive, deductive, and abductive (Saunders et al., 2016). Each approach plays a different role in the advancement of knowledge and has its own logic and limitations. The inductive approach begins with the data collection to explore specific phenomena and then concepts/theories are formed (Saunders et al., 2016; Locke, 2007). In contrast, deductive reasoning starts with an existing theory and develops a strategy to test the theory (Bryman, 2016).

Researchers extract hypotheses from the initial theory then test those hypotheses and revise the theory (Locke, Amengual and Mangla, 2009; Nola and Sankey, 2014). Green, (2014) argues that not all methods under inductive research use conceptual frameworks, for example, grounded theory does not use conceptual frameworks, it develops theory from the data gathered. The abductive approach uses the data collected to explore a phenomenon and extracts themes to develop a theory or modify an existing theory which will require conceptual testing (Saunders et al., 2016). The pragmatist perspective follows an abductive approach (Merriam, 1988; Mitchell and Education, 2018).

Deductive research is usually quantitative as it requires testing hypotheses from established theories. One of deductive reasoning's shortcomings is capturing how individuals think. Researchers have found that the deductive approach fails to adequately explain the scientific method (Woiceshyn and Daellenbach, 2018).

In some fields, inductive research has been claimed to be a vital means of advancing knowledge: developing valid theories requires careful empirical observation over an extended time (Locke, 2007). Usually, inductive studies observe an interesting incident/issue that is usually a gap or a question in the literature that hasn't been fully or partially answered. One limitation of inductive reasoning is that findings can't be proven but can be invalidated. Induction is required to establish valid theories, logically preceded by deduction, which is required to test and enhance theories. Induction and deduction are complementary, to one another both are needed for the advancement of knowledge. The following table compares deductive and inductive approaches to research:

Table 4: Contrasting aspects of the Deductive and Inductive in a Qualitative Approach

Deduction Emphasises	Induction Emphasises	Abductive Emphasised
• Scientific principles • Moving from theory to data • The need to explain causal relationships between variables • The collection of quantitative data • The application of controls to ensure validity of data • The operationalisation of concepts to ensure clarity of definition • A highly structured approach • Researcher independence of what is being researched • The necessity to select samples of sufficient size to generalise conclusions	• Gaining an understanding of the meaning's humans attach to events • A close understanding of the research context • The collection of qualitative data • A more flexible structure to permit changes of research emphasis as the research progresses • A realisation that the researcher is part of the research process • Less concern with the need to generalise	• Focuses on generating plausible hypothesis • Emphasis plausibility over certainty • Combines both qualitative & quantitative data • Follows a flexible research structure • Theory can shape data collection, but the findings may also reshape theoretical assumptions • Recognises researcher's role in constructing meaning • Focuses on developing context-specific insight, deeper understanding

(Saunders, Lewis and Thornhill, 2009).

This thesis followed an inductive qualitative approach. To advance knowledge (Harriman, 2010, p. 6) and build new theories, inductive research is needed ((Locke, Amengual and Mangla, 2009; Eisenhardt, Graebner and Sonenshein, 2016). Inductive research methods such as case studies and ethnography, are frequently used in the fields of management studies, such as organisational behaviour, organisation theory, and strategy to answer "how" and "why" questions and discover organisational processes through time (Eriksson and Kovalainen, 2015, p. 42; Carter and Rogers, 2008). The researcher ruled out abductive reasoning because we didn't combine both inductive and abductive. The research does not test any hypothesis and does not go on to test the developed theory /model so detective reason was ruled out as well.

3.4.4 Research Strategy: Case Study

Research strategy is the "process of collecting and interpreting data with a clear objective" (Rhai, 2017, p.2). There are numerous ways of conducting qualitative research, interviews, grounded theory, ethnography, phenomenological and case study to name a few (Wasterby-Smith et al., 2012). Selecting a suitable strategy relies on the research question, the aim of the study, and the time and resources available to the researcher (Saunders et al., 2009).

The researcher selected the case study method as a suitable strategy for this thesis. A case study is a suitable empirical method for "contemporary phenomenon in depth and within its real-world context, especially when the boundaries between the phenomenon and context may not be clearly evident'' (Yin, 2014: p. 16). Yin (2018) argued that a case study research methodology is used in studies for an in-depth explanation of a phenomenon.

When planning research, the researcher must identify whether research is exploratory, descriptive or explanatory (Saunders et al., 2016). This study aims to explore why firms delay adopting sustainable supply chain practices, which the researcher identified as a gap in the literature.

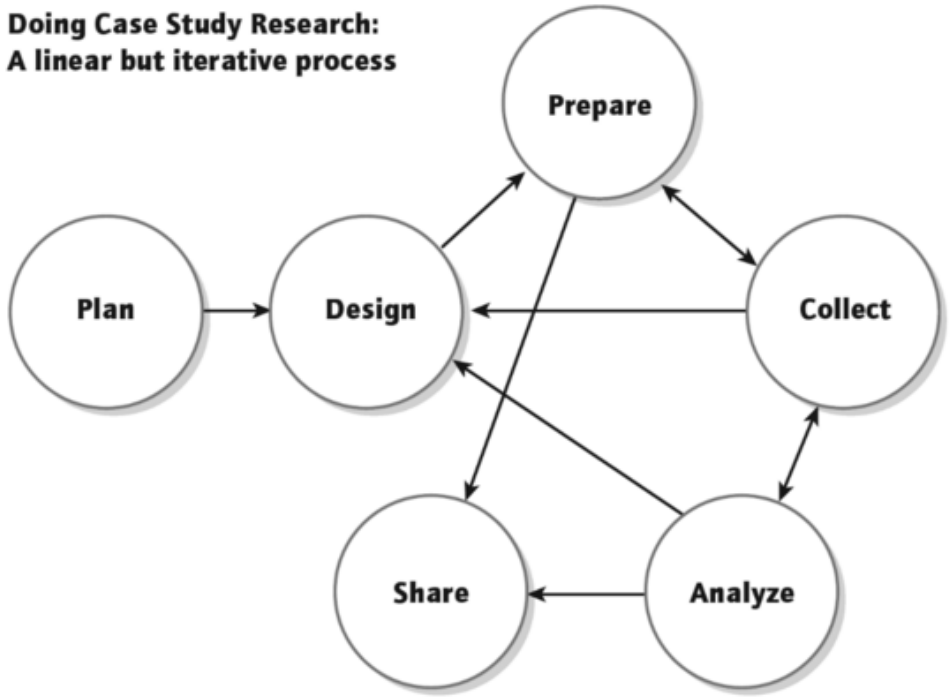
Explanatory research design aims to explain the reasons that caused the occurrence of a phenomenon (Rahi, 2017). Explanatory research design undergoes a more quantitative approach to develop/test a theory. Descriptive research, on the other hand, addresses a specific element (Mayer, 2021) while gathering data on the phenomenon as it is (Rahi, 2017). Descriptive research aims to observe the existing phenomena. Unlike explanatory and descriptive research, exploratory research design aims to provide new insight and provide further clarification on a phenomenon (Mayer, 2015).

Exploratory research uses methods such as surveys, experiments, and case studies to develop new insight into a phenomenon (Yin, 2018). This research aims to shed light and bring new insight to the literature. This thesis is exploratory and aligns with the qualitative case study research approach. It aims to explore the adoption of sustainable practices within the supply chain to develop a theory.

Robert Stake, Robert Yin, and Sharan Merriam are the most prominent methodologists in case study design (Yazan, 2015). Each Yin, Merriam, and Stake provide a map for conducting case study research (Creswell *et al.*, 2007). Stake (1994) has a more flexible approach when it comes to research design, researchers can make major alterations even after proceeding to data collection, with very constructivist epistemological views. On the other hand, Yin (2018) is more of a positivist, his approach to research design is strict and rigid. Yin guides the researcher through the process of data collection, analysis, and interpretation, it demonstrates the path from the research questions to reaching the answers/ conclusion. Merriam is in between Yin's and Stake's epistemological views, but leans closer to stake's constructivist view, "the key philosophical assumption upon which all types of qualitative research view that reality is constructed by individuals interacting with their social worlds" (Merriam, 1998, p. 6). However, emphasises that reality is not objective and that multiple realities exist.

The researcher followed Yin's case study research methodology in terms of the process illustrated in figure 6. The figure below illustrates that although case study research is a linear process it needs to be iterative. At each stage of the researcher must return to the design stage and repeat the process. The researcher followed Yin's case study process to establish rigour while following Merriam and Sake's approach for data analysis.

Figure 6: Doing Case Study Research: A Linear but Iterative Process



(Yin, 2018)

As mentioned before the case-study strategy is most appropriate for "how" and "why" questions. The first step to implementing Yin's approach is to clarify accurately if the type of study questions fit within the case-study approach. The nature of this research is to examine why firms delay adopting sustainable practices within their supply chain, how do they remain competitive while despite not being sustainable. A multiple case study strategy has been selected over a single-case study. A multiple case study strategy is more compelling and provides more robust findings (Herriott and Firestone, 1983). However, a major drawback of multiple case study research is that it requires extensive resources and more time, which sometimes students or researchers may not have.

3.4.5 Case Study Justification

A case study is "a research strategy which focuses on understanding the dynamics present within single settings" (Eisenhardt, 1989, p.534). Case study research is structured yet flexible and provides a

customisable approach that is suitable for supply chain research (Seuring *et al.*, 2005). It can involve several types of data and employs multiple levels of analysis. Case study research can be composed of one or more cases (Eisenhardt, 1989). Typically, data collection methods may include interviews, in-field observations, archival documents, reports, and/or questionnaires.

A case study strategy enables new components to emerge and advances existing theory (Siggelkow, 2007). Case study research has "various aims: to provide a description, test theory, or generate theory" (Eisenhardt, 1989, p.535). When building theory and conceptualising qualitative research will allow for an in-depth understanding. The case study approach can provide the researcher with field observation, allowing for a comprehensive analysis of a multi-faceted adoption of sustainable practices.

Due to the call for more theoretical underpinning in the sustainable supply chain field and the lack of understanding of what motivates firms to adopt sustainable practices (Ansari and Kant, 2017b; Carter and Liane Easton, 2011; Reefke and Sundaram, 2017; Seuring and Müller, 2008a; Sarkis, Zhu and Lai, 2011), the researcher adopted a multi-case study approach. Case study research stems from the motivation to understand a complex phenomenon (Yin, 2014; Merriam, 2009; Stake, 1995). Siggelkow, (2007) emphasises the role the case study approach plays in evoking ideas, as well as advancing existing theory.

Several researchers have recognised the role of case-based research in supply chain management and the development of theory within the field (Voss, 2010). Case studies in particular focus on understanding the dynamics present in a single setting (Amaratunga, Baldry and Sarshar, 2001). A review of current sustainable supply chain management literature illustrates a clear preference for case study research as it enables close observation of emerging phenomena that are difficult to define (Seuring and Müller, 2008a; Ansari and Kant, 2017). Some researchers criticise and challenge the case studies for the lack of rigour (Ellram, 1996). However, Seuring and Müller, (2008b) argue that if the research process is structured and well documented then case study research allows profound analysis of current phenomena. Despite its limitations, case study research has significant illuminating advantages that are not possible to attain by using other approaches. The researcher accepts that the results from case studies are not generalisable, but instead provide a more holistic insight into the ambiguity of the motivations and timing of adopting sustainable practices within the supply chain.

3.4.6 Single vs Multiple Case Study

There are no set guidelines on the number of case studies needed to generate a good-quality research paper. Various scholars have tried to create some general rules for selecting the number of case studies to assist researchers in designating the number of cases. For example, Eisenhardt (1989) proposes that researchers need to continue adding cases until theoretical saturation is achieved. Equally, Yin (2014) argues that the number of case studies depends on the amount of confidence the researcher wants in their results.

A multi-case study approach provides the in-depth analysis required to understand what triggers and when firms adopt sustainable practices. Building theory and conceptualising qualitative research will allow for a deeper understanding (Stake, 2010). A case study as a strategy will provide flexibility in data collection which will allow for full analysis of a multi-faceted exploration of the adoption of sustainable practices.

On the other hand, (Perry, 1998) proposes that three-six cases and 35-50 interviews are needed for a research-based postgraduate degree thesis. Several scholars have agreed the accepted range for the number of case studies falls in the two-four case study category or the ten to fifteen maximum category (Eisenhardt, 1989; Perry, 1998).

Per the above, this research selected three case studies to ensure the richness of findings, with one main case study and two supporting cases. The following section will provide the details of the time horizon for this thesis.

3.4.7 Time Horizon

This research used a cross-sectional design, with the data collected in a limited period (Byrman, 2016). The primary reason for utilising a cross-section design versus a longitudinal design was the time constraint. A longitudinal study requires more resources, is more expensive, and requires a long period of data collection (Saunders and Bezzina, 2015) Qualitative researchers usually use the cross-sectional design when collecting data through semi-structured interviews (Bryman, 2016).

Cross-sectional research is most relevant when assessing the attitudes of a specific population at a particular point of time (Wasterby-Smith et al., 2012). Cross-sectional studies are frequently used by social sciences to measure opinion, attitudes, or practices at a single point in time (Bryman, 2016).

Qualitative research that is cross-sectional aims to explore a phenomenon over a specific, relatively short period (Saunders et al., 2016). In this thesis, the researcher collected qualitative data from three

different case studies over a period of six months. This period was sufficient to gather the necessary insights and answer the research questions.

The decision to use a cross-sectional design was also influenced by the research objectives, which sought to explore the dynamics and timing of the adoption of sustainable practices in the supply chain, focusing on how firms implement or delay the adoption of these practices. While longitudinal research could have provided additional insights into the longer-term impacts of these decisions, the cross-sectional approach allowed for a detailed snapshot of current practices and motivations.

3.4.8 Case Study Selection

This section outlines the process of case selection, the context of cases, and ethical considerations for data collection. This thesis follows a multi-case study strategy, based on Yin's case study protocol, which emphasises two main principles for case study selection: 'literal replication' studies with predicted similar results or 'theoretical replication' cases with predicted contrasting results. This research selected case studies with the aim of collecting similar results 'literal replication'.

Sampling techniques are either probability sampling or non-probability sampling. Qualitative research uses non-probability sampling; Eisenhardt (1989, p.537) claims that the "random sampling technique is neither necessary nor preferable in qualitative research". For this study, the only viable way to create a replicable multi-case study was through non-probability sampling.

According to Yin (1994), the case study protocol should include the research question, research method, consent and ethical approval, interpretation, and criteria for assessment. The researcher followed Merriam's (2009) and Yin's (2014) recommendations in case study selection and reporting, a step-by-step diagram is represented below in Figure 7.

Figure 7: Researcher Data Collection Process

The data collection procedure followed by this qualitative case study involved several key steps:

1. Research Design: Begins by defining the research objectives and research questions. Clearly outlining the scope of the case studies. While ensuring it aligns with the research goals.
2. Selecting Cases: cases were selected based on the relevance to the research question, uniqueness of the case, significance, and its ability to provide in-depth insights.
3. Data Sources: interviews, documents, observations, and video materials. Each source contributed unique perspectives to each case.
4. Data Collection Methods:
    a. Interviews: Conduct in-depth semi-structured interviews with key participants, interviews were semi-structured, allowing for flexibility in exploring relevant topics.

    b. Document Analysis: Collected relevant documents, reports, records, and any written materials I took. This included company documents, emails, policies, and historical records.

5. Observations: also notes taken in observations in the field. The researcher observed processes such as recycling processes, distribution activities, and other relevant operations.
6. Data Collection Tools: prepared interview guide, document templates, observation checklists, and recording device.
7. Data Collection Process:
    a. Interviews: Scheduled and conducted interviews with relevant participants. Ensured informed consent and confidentiality. Recorded the interviews, using audio recordings, on my phone, and in some cases took handwritten notes.
    b. Document Analysis: Collected and reviewed relevant documents, making notes of key information and patterns.
    c. Observations: maintained field notes that describe observations, interactions, and any noteworthy procedures.
8. Data Management: Organised and stored collected data in a systematic and secure manner. Ensure that data is properly labelled and categorised for easy retrieval and analysis.
9. Data Analysis: Once data collection for each case was completed, we proceeded with the analysis transcribing the interviews and followed by the analysis of the transcriptions. This involved:
    a. Data Coding: Assign codes to segments of data that relate to specific themes or categories.
    b. Thematic Analysis: Identify recurrent themes, patterns, and relationships in the data. Group similar codes into broader themes.
    c. Constant Comparison: Continuously compare data within and across cases to refine themes and explore connections.
10. Quality Control: Implemented strategies to ensure the quality and trustworthiness of the data. This involved the participants reviews of the transcribed document and then the findings and maintaining an audit trail of analytical decisions.
11. Reporting: Prepared a case report that presents your findings for each case.
12. Ethical Considerations: Ethical guidelines were strictly followed throughout the research phases; special care was taken during data collection process and write-up. This included: participant confidentiality, obtaining informed consent, and responsible handling of data.

3.4.9 Research Phases

This section of the chapter discusses the pre-field and field phases of the research. The reporting phase will be discussed in the Analysis Chapter of this thesis. In the pre-field phase, the researcher searched for firms in various industries that had implemented sustainable supply chain management practices. The research explores the phenomena of why firms delay adopting some sustainable practices and what motivates them to adopt some sustainable practices within their supply chain. Therefore, the industry and the location of the firm were not relevant to the aim of the research.

The researcher searched for firms that had been adopting sustainable supply chain practices. They networked with potential firms in person by attending conferences and using the researcher's LinkedIn network. Potential organisations were approached, some organisations shared business cards/emails and requested a follow-up email regarding the context of the research, while others refused to participate. Emails were sent out with more information to the organisations that expressed interest, but the majority declined to participate.

The researcher was able to secure the participation of three organisations all of which integrated SSC practices. The researcher reviewed the organisations' website and the reports available online to verify if they adopted SSCM practices. All three websites indicated that they participate in sustainable supply chain practices although their websites predominantly highlighted their CSR initiatives. Two companies were based in developed countries; the UK and Finland, and one in a developing country; Jordan. After gaining a better understanding of each company and what they do, the researcher proceeded to organise interviews with each of the firms.

The companies selected are presented anonymously due to a non-disclosure agreement signed with one of the firms before data collection. Presenting the firms anonymously encouraged participation and avoided harming the firm's reputation. This also contributed to greater transparency with less fear of repercussions on the participant or their company.

The selected case studies represent three sectors; home entertainment, pulp and timber, and the construction industry, distributed across three different geographical locations. The diversity of the sectors and their locations enhanced the validity and reliability of findings by obtaining a wider set of perspectives on why firms delay adopting sustainable practices and what motivates firms to adopt some sustainable practices within their supply chain. The following table provides an overview of each of the selected firms.

Table 5: Company Overview

Company Name	Type of Organisation	Industry	Location
Company A	Large International firm	Home Entertainment	United Kingdom
Company B	Large International firm	Pulp and timber industry	Finland
Company C	Large	Construction	Jordan

Company A was one of the companies identified at the Richmond Supply Chain Forum. Company A is one of the biggest international firms in the home entertainment industry based in the UK. A non-disclosure agreement (NDA) was signed with Company A, before gathering any data. The company had been actively participating in sustainable practices within its supply chain. Data was gathered from their distributor and scrappage suppliers. Company A was selected as the main case, with the other two companies serving as supporting cases.

Several documents were collected to explore the firms' operations, and some email communication between the firm, the rest of the industry, and retailers was also obtained. Seven face-to-face interviews in the main headquarters were conducted with the Director of Safety, Sustainability and Continuity EMEA, the Head of Supply Chain, and the Senior Supply Chain Operations Analyst. There were also another three follow-up interviews over the phone. Two interviews and a tour of the distribution facility for the firm also took place. In addition to a tour of the scrappage services and facility along with an interview with their CEO.

Supporting Cases: Company B/C

Company B was contacted through an acquaintance from a seminar at Durham University Business School. Company B is an international firm in the timber and pulp industry located in Finland. After a child labour case was brought against them, they became very proactive in pursuing sustainable practices within their supply chain. Three interviews took place over Skype, with the SVP International Policy Coordination Sustainability and the Head of Responsible Sourcing. They also provided sustainability reports and were open to a follow-up interview.

Company C was selected through the researchers' LinkedIn network. The firm is one of the largest firms located in Jordan. Their website demonstrates that they are actively pursuing sustainable and green solutions in the construction industry. The researcher conducted an interview with the CEO/owner of the firm, who expressed great interest in becoming more sustainable and interviewed

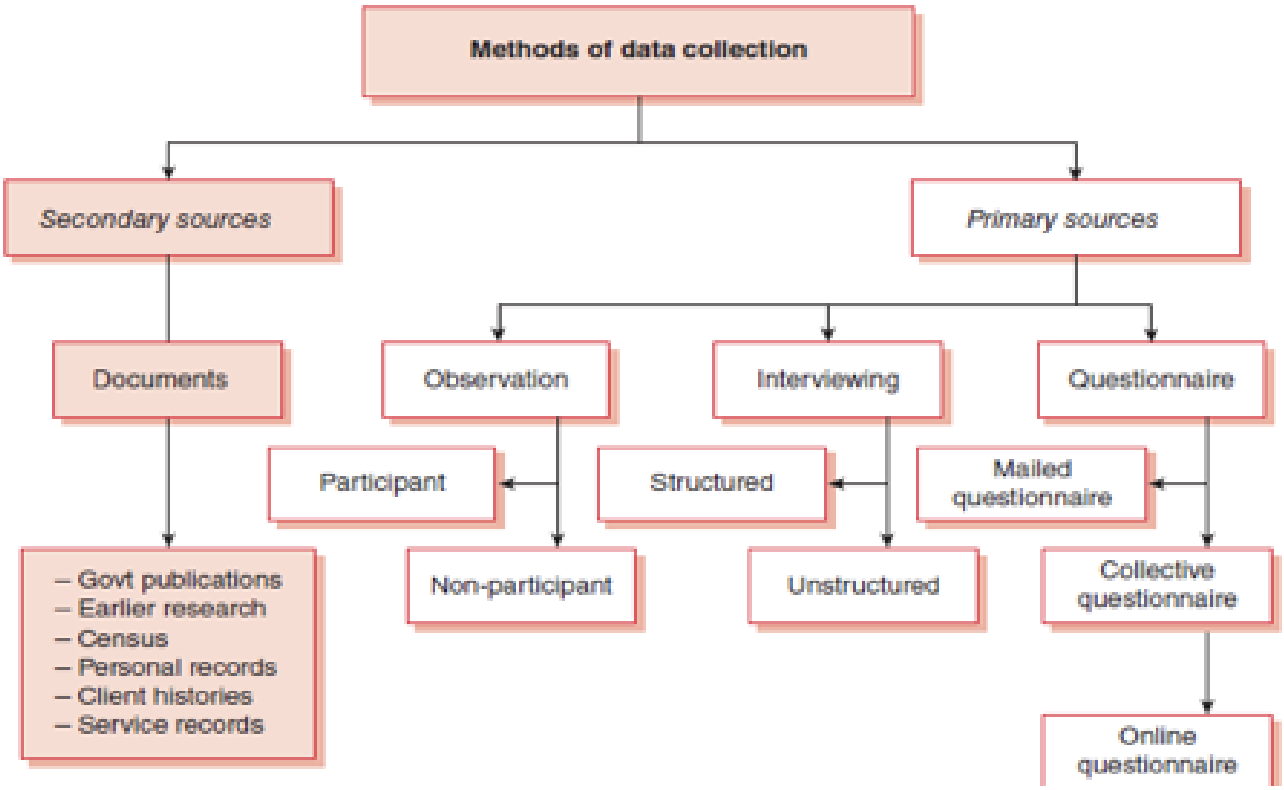
the Procurement Manager and the Head of SCM. They did not have a sustainability head, instead, they had a Corporate Social Responsibility Officer.

After conducting interviews with the CEO and Head of Supply Chain, an interview with the Procurement Manager was organised. The responsibility for sustainable practices was shared between the CEO Head of Supply Chain and the Procurement Manager.

3.4.10 Data Collection

Yin (2014) proposes six sources for data in case study research, (1) documents, (2) observations, (3) interviews, (4) participant observations, (5) physical facts, and (6) archival records. Multiple sources of data enhance the effectiveness of case study research (Yin, 2014). These sources are a combination of primary and secondary data. Kumar (2014) developed a data collection framework as shown below. In the diagram, there are two generic sources for data in academic research namely primary and secondary sources. For this study, secondary and primary sources of data were collected and analysed; discussed in the following sections.

Figure 8: Methods of Data Collection



Source: Kumar (2014)

Secondary and primary data sources were gathered to develop the case studies. Primary sources included semi-structured interviews and observations. In qualitative research data is collected using open-ended questions (Mayer, 2015). While the secondary information was composed of email correspondences, the firm's sustainable reporting, the company websites, and other documents that were provided by the companies. The type of data collected for each of the three studies is demonstrated in a clear table 6 below:

Table 6: Type of Data Collected

	Primary Data			**Secondary Data**			
	Semi-Structured interview Face to Face	Phone Interview	Field Observation	Website	Sustainable reporting	Email Correspondence	Documents provided by the firm
Company A	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Company B	No	Yes	No	Yes	Yes	No	No
Company C	No	Yes	No	Yes	Yes	No	No

The researcher followed the procedure illustrated below in figure 8 to conduct this multi-case study. The researcher based the producer on Yin's (2018) case study method. The researcher started with the research question and the study's aim, followed by the selection of cases and the design data collection protocol. The design data collection protocol is in place to clarify the design and data collection process for the study. Findings from each case influence the design of the study, and the case that follows. A report for each of the cases was written separately highlighting the main emerging themes from the study. The report also indicated the extent of replication logic.

3.4.11 Semi-Structured Interview

Before setting up meetings with participants from Company A, the researcher prepared a set of questions to help guide the discussion towards the aim and objectives of the study (appendix 1 list of interview questions). The interviews were semi-structured; a list of guiding questions was prepared, but not all questions were asked.

The first question was to establish consent to record the interview after the consent form was signed and the recording app was turned on cueing the start of the interview. The first couple of questions of the interview were to collect information on the professional background of the participant. The professional background indicated the participants' suitability for this research and served as an icebreaker.

After gathering some insights about the participants, the researcher shared a brief on the aim of the research and the objective of the interview. The questions began with more general SSCM questions to understand how the participant defines SSCM and then continued to share a unified definition of SSCM.

The second set of questions was designed to collect data about the contributors to SSCM in the company. Most of the time the researcher only asked 3-4 questions from the list prepared, the rest were follow-up questions to something the participant said during the interview.

Table 7: Number of Interviews

Case Study	No. of Interviews	Job Title
Company A	3	Head of Supply Chain
	1	National Account Manager
	2	Senior Supply Chain Operations Analyst
	2	Director – Safety, Sustainability & Continuity EMEA
	1	Returns Manager (Distributor)
	1	Senior Account Manager, Client Services (Distributor)
	1	CEO (Scrappage)
Company B	1	SVP International Policy Coordination Sustainability
	1	Head of Responsible Sourcing
Company C	1	CEO
	1	Head of Supply Chain
	1	Procurement Manager

3.4.12 Data Analysis

The unit of analysis for this study is the focal firm. This section outlines the strategies employed in analysing qualitative case study and justifies the mythological choices made throughout the research. There are four general strategies used in analysing qualitative case study data. The first is relying on theoretical propositions, which can shape the data collection plan and provide a foundation for data analysis. The second is the inductive approach, often employed in grounded theory research, where various codes are assigned to the data, with each code representing a concept (Corbin and Strauss, 2015; Glaser and Strauss, 2017). The researcher investigates the data and identifies initial patterns that

may be built into unified concepts. The third approach is to organise the case study to a descriptive framework, this is best for descriptive case studies. The final strategy is to try and define opposing plausible explanations and combine them with the other three strategies mentioned (Patton, 2014).

For the analysis, the researcher considered theoretical propositions and grounded theory, applying the Gioia method for coding and presenting the data. The Gioia method was developed by Dennis A. Gioia and colleagues, it focuses on a systematic process of coding and structuring data to derive meaningful theoretical insights, often from interviews, field observations, and other qualitative sources. The researcher utilised grounded theory as the method for identifying emerging patterns and codes, aligning with the aim of the research to build on existing institutional theory, although, the study is not purely based on grounded theory, due to conducting a literature review.

Propositions were used to guide attention to key elements that need to be investigated within the research area. The following propositions were formulated to explore "how" and "why" firms delay adopting sustainable supply chain practices within their supply chains:

Proposition 1: Financial Incentives

Firms are more likely to adopt sustainable practices within their supply chain when they perceive greater financial incentives and benefits, such as cost savings, improved reputation, or competitive advantage, in comparison to traditional unsustainable practices. Timing influences this decision, as firms may delay adoption until the financial advantages become significant enough to justify the change. This proposition can be explored through interviews with financial decision-makers to assess how they evaluate potential benefits.

Proposition 2: Risk Assessment

Firms are inclined to adopt sustainable practices when they assess that the risks associated with maintaining an unsustainable supply chain, such as reputational risks, operational risks, and regulatory risks, outweigh the potential risks of transitioning to a sustainable supply chain. Timing is critical; firms may postpone risk assessments until external pressures compel them to reconsider their current practices. This proposition will be examined through structured interviews with supply chain managers.

Proposition 3: Awareness and Knowledge

Delays in adopting sustainable practices can arise from insufficient awareness or knowledge about their existence and benefits. Timing plays a crucial role here, as delays in obtaining information can prolong decision-making processes. This proposition can be explored through in-depth interviews with

employees to assess their understanding of sustainable supply chain practices and identify barriers to awareness.

Proposition 4: Feasibility and Availability

Firms may postpone the adoption of sustainable supply chain practices because they perceive a lack of availability or feasibility of these practices. Concerns about disrupting existing supplier relationships and potential adverse economic consequences may lead to delays in adoption. Timing affects this perception, as firms might wait for more robust evidence of feasibility before committing to changes. Data on perceived availability will be collected through case studies.

The thematic analysis was conducted on the transcribed (appendix 2) interviews, field notes, and documents provided. One of the difficult elements of case study research is the analysis of the data/ evidence collected, "… it is one of the least developed aspects of doing case studies" (Yin, 2018, pg. 165). In case study research the analysis depends on the researcher's style of thinking, evidence, and cautious reflection of alternate interpretations.

To enhance the reliability and validity of the findings, the researcher employed various techniques, including:

1. Pattern Matching: Comparing the patterns observed in the data against the theoretical propositions.
2. Explanation Building: Developing explanations based on the data to understand the phenomena studied.
3. Time-Series Analysis: Examining changes over time in firms' practices and perceptions.
4. Logical Models: Creating models to represent the relationships between different variables in the study.
5. Cross-Case Synthesis: Synthesising findings across different cases to identify common themes and divergent patterns.

The researcher employed the Gioia method for data analysis, immersing themselves in the data to identify emerging themes and patterns. Following the guidance of Miles and Huberman, (1994), several techniques were utilised to initiate the data analysis process, including categorising themes, creating matrices of contrasting groups, and developing visual representations of recurring elements, as well as tabulating the frequency of these elements. These techniques combined with the Gioia method provided a structured framework for thematic categorisation and analysis, particularly suited for examining organisational behaviours within the context of SSCM adoption.

The Gioia method was selected due to its emphasis on inductive-deductive reasoning, which aligns with the study's aim of uncovering insights into the timing and motivations behind sustainable supply chain management adoption. This method's capacity for revealing layered organisational dynamics enabled the researcher to interrogate how institutional pressures and internal readiness shaped the timing of adoption decisions. Visual representations, such as thematic matrices and contrasting group comparisons, were instrumental in identifying temporal trends. For instance, they illustrated how delays in adoption correlated with external regulatory changes and internal barriers, offering a richer understanding of these dynamics.

The following steps outline how the Gioia method was implemented in qualitative research:

- Step 1: Data Collection

  Qualitative data were collected primarily through interviews, open-ended questions to gather in-depth, first-hand insight from participants.
- Step 2: First-order Concepts

  The researcher read and re-read the data to become familiar with the content. The data were then coded based on the interviewee's terms and language, avoiding the imposition of preconceived theoretical ideas. Recurring phrases, ideas, or terms were assigned labels or codes, referred to as first-order concepts or codes, which are entirely informant-centric (i.e., in their own words).
- Step 3: Identify Second-order Themes

  The researcher reviewed the first-order concepts to identify patterns, similarities, or relationships between them. These concepts were grouped into categories or themes, which are more abstract and involve the researcher's interpretation. These second-order themes provided a researcher's perspective on the data and contributed to higher-level insights.
- Step 4: Create Aggregate Dimensions

  After identifying second-order themes, the researcher grouped related themes into aggregate dimensions, which represent broader theoretical constructs emerging from the data.
- Step 5: Data Structure

  A data structure was created to visually represent the progression from first-order concepts to second-order themes and finally to aggregate dimensions. The data structure is central to the Gioia method and demonstrates how raw data (informant-centric) were transformed into higher-level theoretical constructs (researcher-centric).
- Step 6: Ensure Data Saturation

The researcher reviewed the coding process to ensure no new codes or themes emerged from additional data. Data saturation was achieved when major concepts and themes were fully captured. When necessary, earlier stages were revisited to refine themes or dimensions.

- Step 7: Theoretical Development

  The aggregate dimensions and overall data structure were used to inform the theoretical contribution of the study. These contributions explained relations and dynamics uncovers through analysis.

- Step 8: Validate with the Literature

  The findings and emergent theory were then compared with existing literature in the Discussion Chapter, to determine how the study fits into or challenged established theories.

- Step 9: Presentation of Findings and Discussion

  The findings were presented, ensuring the data structure was clearly depicted. Examples or quotations from the data were used to illustrate first-order concepts, second-order themes, and aggregate dimensions, showing how the theory emerged from the data. A discussion section was included to explain the theoretical implications of the findings.

The researcher also leveraged Excel and manual hand coding for data analysis, choosing a more visual and hands-on approach over software like NVivo. This decision allowed for deeper engagement with the material, fostering a closer connection with the data. While the volume of data collected was substantial, it was manageable for manual coding, enabling the researcher to identify subtle patterns and gain richer insights into the motivations and delays associated with SSCM adoption. However, this approach required significant time investment, which, while suitable for this study, may present challenges in larger-scale research. To ensure methodological rigour, the coding process underwent iterative cross-checking, and themes were validated through peer debriefing sessions. Triangulation with secondary data sources further reinforced the reliability of findings.

The Research also employed memos and notes throughout the analysis in line with Corbin and Strauss, (2015), to aid in interpretation and maintain flexibility in the codding process. This iterative approach encouraged continuous refinement of insights as the researcher engaged with the data, ensuring a robust understanding of the interactions between key themes.

By employing the Gioia method and other qualitative analysis techniques, this study systematically examines the timing of sustainable supply chain management adoption. The approach provides both a theoretical and practical framework for understanding how firms delay adoption decisions. The study

contributes to the SSCM literature by offering insights into the barriers to adoption and how organisations can address delays to optimise the transition to sustainable practices.

3.4.13 Validity

Qualitative research lacks structured guidance or standardised 'templates' that prescribe consensus conventions for data collection and analysis (Pratt, 2009). This variability can pose challenge to establishing validity, which is crucial for ensuring credibility of qualitative findings. Reinhardt and Gurtner, (2018) developed approaches to achieving qualitative rigour, emphasising the notable differences in both their assumptions and processes. Although both were dedicated to high-quality qualitative research they differed. The deeper they delved into explaining the rationales and motivations behind their own research processes, the more apparent it became that a wide variety of options exist when conducting rigorous qualitative research.

Internal validity refers to the extent to which the findings of a study accurately reflect the phenomenon being studied, free from confounding variables. In qualitative research, achieving internal validity hinges on several key practices:

1. Triangulation: Yin (2018) asserts that the validity of qualitative case study research is enhanced using multiple sources and the triangulation of data. In this study, data were collected from various sources, including interviews, documents, field notes, and observations. This multi-faceted approach allows for a more comprehensive understanding of the research question, as it mitigates the limitations inherent in relying on a single data source.
2. Member Checking: To ensure the accuracy of the findings, participants were invited to review the transcripts of their interviews and confirm their accuracy. This process, known as member checking, serves to validate the researcher's interpretations and provides an opportunity for participants to clarify or elaborate on their responses.
3. Open-Ended Questions: The interview questions were designed to be open-ended, allowing participants to provide in-depth responses. This method encourages richer data collection, facilitating a more in-depth understanding of their perspectives and experiences.
4. Reflexivity: The researcher maintained a reflexive stance throughout the research process, reflecting on their own biases and assumptions. This practice helps to identify and address any potential influences that may affect the interpretation of data, thereby enhancing internal validity.

3.4.13.1 External Validity

External validity refers to the extent to which the findings of a study can be generalised to other contexts, settings, or populations. Although qualitative research often prioritises depth over generalisability, several strategies can enhance external validity:

1. Contextual Richness: By providing detailed descriptions of the case studies and the contexts in which they were conducted, the researcher enabled readers to assess the applicability of findings to other settings. This contextual richness allows for a better understanding of the factors that may influence the transferability of results.
2. Diverse Sampling: The selection of case studies from various sectors and geographical locations contributed to the external validity of the research. By including firms from different industries and regions, the findings may be more relevant to a wider array of contexts, allowing for broader applicability of insights regarding sustainable supply chain practices.
3. Thick Description: Utilising thick description in reporting findings enhances external validity by providing enough detail for readers to determine how the results might relate to their own contexts. This approach not only captures the complexities of the data but also facilitates a deeper understanding of the phenomenon being studied.
4. Theoretical Generalisation: Rather than seeking statistical generalisability, qualitative research often aims for theoretical generalisation. By linking findings to existing theories and frameworks in sustainable supply chain management, the study contributes to the broader discourse and enables scholars and practitioners to draw connections between the research outcomes and their own experiences.

In summary, the validity of qualitative research is intricately tied to the appropriateness of the methodology, the rigor of data collection, and the careful analysis of findings (Leung, 2015). While qualitative studies do not adhere to the same set criteria for validity as quantitative studies (Hayashi et al., 2019), implementing strategies such as triangulation, member checking, and contextual richness can enhance both internal and external validity. By adhering to these practices, the researcher aims to produce credible and trustworthy findings that contribute meaningfully to the field of sustainable supply chain management.

3.4.14 Reliability

Reliability is defined as implementing the same processes used by earlier research multiple times to gather similar findings (Yin, 2018). Consistency of data across different contexts and over time enhances the overall quality and reliability of the research findings (Hayashi, Abib and Hoppen, 2019).

In this study, the researchers aimed to strengthen reliability by replicating established data collection and analysis procedure that was developed by Yin (2018).

To ensure reliability and rigour the researcher followed the three standards for data collection developed by Yin (2014):

1. Utilisation of Multiple Sources: The researcher employed a variety of data sources to validate and develop lines of inquiry. This multi-source approach not only enriches the data collected but also minimises the risk of bias associated with any single source. By triangulating data from interviews, documents, field notes, and observations, the study enhances its reliability. This diversity of sources allows for cross-verification of information, reinforcing the credibility of findings related to sustainable supply chain practices.
2. Creation of a Clear Database: A well-organised database was established for all collected data, ensuring that it is presentable and clear for independent inspection. This systematic organisation increases consistency, making it easier for other researchers or stakeholders to verify findings. The database serves as a reliable repository of evidence, allowing for easy retrieval and reference during the analysis process. By maintaining a structured format, the researcher facilitates transparency and accountability in the research methodology.
3. Maintenance of an Evidence Trail: Throughout the research process, a comprehensive trail of evidence was meticulously documented. This includes all data collection procedures, analytical decisions, and revisions made during the study. Maintaining a clear audit trail allows for external scrutiny of the research quality, providing assurance that the findings are grounded in rigorous methods. This documentation not only supports the reliability of the current study but also provides a valuable resource for future research in the field of sustainable supply chain management.

In the context of this research, which investigates the motivations and delays associated with adopting sustainable supply chain practices, reliability is particularly critical. The complexity of sustainable practices often necessitates a thorough examination of various factors influencing firms' decisions. By employing the strategies, the researcher ensures that the findings are not only credible but also robust and applicable across different firms and sectors.

The replication of Yin’s methodologies, combined with a focus on multiple data sources and systematic documentation, enhances the reliability of the study’s outcomes. As such, stakeholders—including academics, practitioners, and policymakers—can have greater confidence in the research

conclusions. This reliability is essential for informing decisions regarding the promotion and implementation of sustainable supply chain practices, ultimately contributing to more effective and informed strategies in the field.

In conclusion, the measures taken to enhance reliability throughout the research process align with the overarching aim of producing rigorous, credible, and actionable insights. By adhering to established standards and best practices in qualitative research, this study aims to contribute meaningfully to the discourse on sustainable supply chains and their adoption in contemporary business practices

3.5 Research Limitations/ Ethics

The study identified the ethical practices and requirements placed by Durham University Business School and adhered to those regulations. This includes all procedures and processes of data collection through interviews as well as the ethical use of the data collected. All the requirements of disclosure, consent, confidentiality, and data integrity have been acknowledged and firmly followed. Ethical issues may occur at various phases of the research, and it is the responsibility of the researcher to manage them. Data protection, non-disclosure, privacy and confidentiality, anonymity, and informed consent are all part of the ethical considerations of this study. Ethical approval was obtained from Durham University Business School (appendix 5).

Participants of this research were provided with a study brief, information about how the data will be used, and information about the confidentiality and anonymity of participants. Participants also signed a consent form before being interviewed. Participants gave consent before recording the interviews. A phone with a recording app was used to record the interviews (consent form sample in the 4.) On one occasion the interviewer was not allowed to bring in their phone to record the interview for security purposes, and some participants did not give consent to be recorded. Instead, detailed field notes were taken.

Limitations always exist. Limitations of this study come from the bias of interviewees and the researchers. To limit the bias of interviewees, triangulation of information by using multiple sources to ensure reliability was conducted. The research required investigating large institutions and examining their environmental and social operations. These firms had high ethical standards and stringent procurement procedures and likely did disclose all their information. Some participants did share full details of the fundamental plan and strategy for handling the quality of their sustainability initiatives. This was mitigated by relying on secondary sources of information in journals, annual reports, and government publications for validation and triangulation as well.

As for the bias the researcher may have, acknowledgement of the bias and being aware of any bias was the best way forward. By acknowledging the bias, the effect of the bias is minimised. The researcher used self-reflection and identified personal beliefs to reduce or counteract their effect on the analysis.

3.6 Chapter Summary

This chapter began with an introduction, which included the subheading of the upcoming sections of this chapter. The introduction of this chapter also included the research aim and research questions of this thesis. Thereafter, the researcher describes the case study methodology of the research study.

The chapters covered the most prominent philosophical positions in the business management field. It explained positivism, interpretivism, pragmatism, critical realism, and postmodernism. It justified the use of pragmatism as a suitable research philosophy by following the (Merriam, 1988) school of thought on case study research. The chapter moved to the research approach section and justified the use of the induction research approach over the deductive for developing the conceptual model. This research aims to provide more insight into why firms delay adopting sustainable practices and what motivates firms to adopt sustainable supply chain practices.

The research design section highlighted the use of exploratory case study research for this thesis and aided in developing new insight into the phenomenon of why firms delay adopting sustainable supply chain practices. Based on Yin, (2018) recommendation when conducting multi-case study research, a separate case report should be written for each study. Chapter 4 Case Reports presents an individual case report for each of the three cases selected for this study. Followed by Chapter 5 Analysis and Findings where a cross-case report is presented, followed by a conclusion.

4 Chapter IV-Findings

4.1 Introduction

Building on the methodological approach described in Chapter 3, this chapter presents the findings from the qualitative exploratory case studies exploring the factors influencing firms' adoption of Sustainable Supply Chain Management (SSCM) practices, with a particular focus on the timing of these decisions. Grounded in institutional theory, the study investigates how external pressures—such as regulatory mandates and societal expectations—shape the urgency of firms' sustainability responses. Despite these pressures, the timing of SSCM adoption varies significantly across firms, influenced by internal factors such as perceived risks, financial considerations, and awareness of sustainable practices.

4.1.1 Research Questions

This chapter seeks to answer the following research questions:

- RQ1: What are the underlying reasons for firms' delay in adopting sustainable practices within their supply chain?
- RQ2: What factors influence the timing of sustainable supply chain practice adoption?

The primary aim was to explore the timing, barriers, and enablers that impact when firms choose to implement sustainable practices. The findings are organised around five key themes, which emerged from the thematic analysis which are presented in relation to the research questions. These themes reflect the interaction between external institutional pressures and internal conditions that influence firms' timing decisions. Data from the three case studies was systematically analysed using the Gioia method. Following the presentation of findings, a refined conceptual framework will illustrate how these insights deepened the understanding of the dynamics influencing SSCM adoption timing.

4.2 Structure of the Chapter

This chapter is structure as follows: it begins with a brief overview of each case study, outlining the types of data collected. This is followed by a description of the coding process used in the analysis. Followed by a section that presents the emergence of the five key themes, which address the research questions about the timing and pressures influencing the adoption of SSCM practices. The analysis follows the Gioia method, which involved a two-level coding process: initial coding, which focused

on identifying core concepts, and secondary coding, which synthesises these concepts into broader themes.

Each theme is explored in depth, directly linking to the research questions and propositions while shedding light on the reasons behind delays in SSCM adoption. The chapter concludes with a critical reflection on the conceptual framework, incorporating these findings to refine and adjust the framework based on the insights gained.

4.3 Overview of Data Collected

4.3.1 Case Study One (Company A)

CA UK is a CAE subsidiary responsible for distributing movies and television shows for home entertainment in the United Kingdom, the Middle East, and North Africa (MENA) region. The purpose of this case report is to provide some background on CA UK and its sustainable practices as part of a larger qualitative study aimed at understanding why firms embrace sustainable practices and the barriers and enablers they face when adopting sustainable supply chain management practices.

Aim: CA UK primarily aims to distribute high-quality entertainment content to its customers. However, the company is also committed to minimising its impact on the environment and promoting sustainable practices throughout its supply chain. The company recognises that sustainable practices are becoming increasingly important to its customers and are dedicated to making positive changes in this area.

Supply Chain System: CA UK's supply chain system involves a complex network of suppliers, distributors, and retailers. The company is responsible for the forecasting, manufacturing, distribution, and returns of its products. The firm works with a variety of suppliers, including film studios, production companies, and content creators. They also work with distributors and retailers to ensure that their products are available to customers in a timely and efficient manner.

This case includes interviews from CA, their UK distributor (DCA), and their UK recycling Facilities (RCA). DCA is responsible for distributing the products of CA to their clients, such as ASDA, Sainsbury, and Tesco. RCA is responsible for disposing of returned products, mostly discs, disc sleeves, magazines, and figurines of limited-edition products.

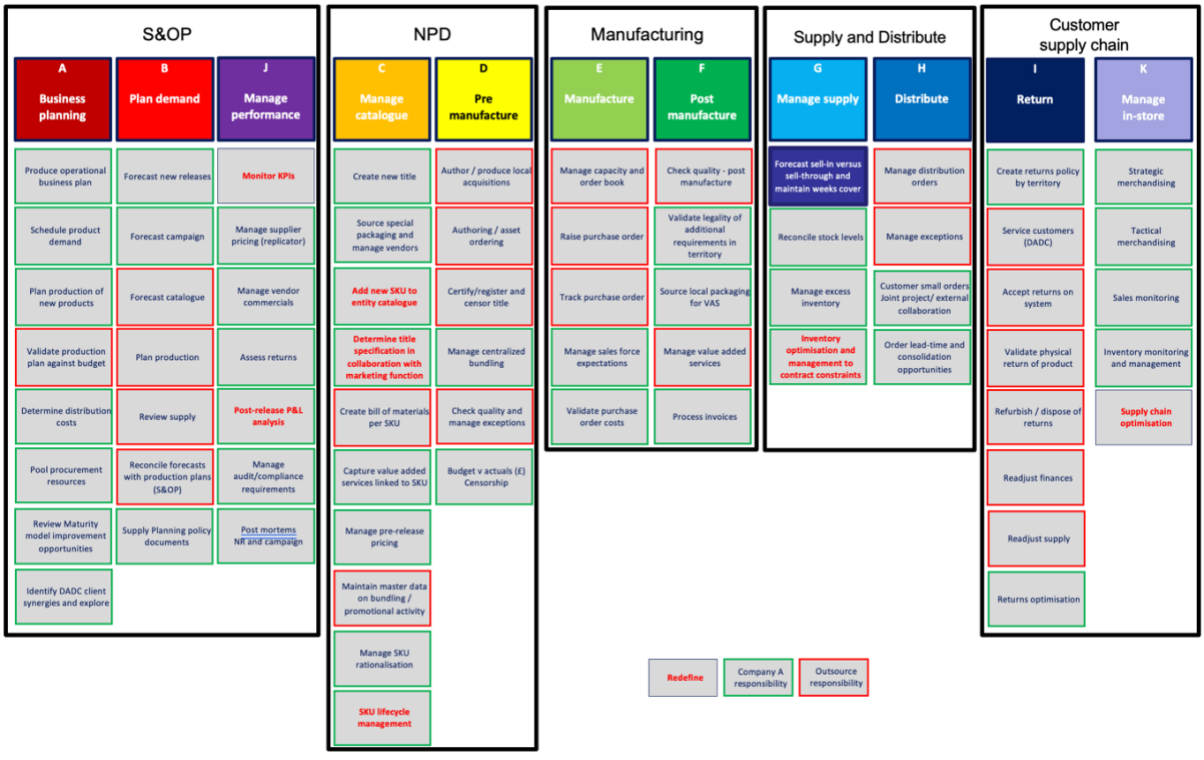
Sustainable Practices: The interviews revealed that CA is committed to sustainability and has implemented several SSCM practices, including recycling, the use of biodegradable packaging

materials, and carbon footprint reduction measures. The company has implemented several initiatives to reduce its environmental impact, including:

- Reducing plastic packaging: CA UK has taken steps to reduce the amount of plastic used in its product packaging. The company has introduced more eco-friendly packaging options, such as cardboard sleeves and paper-based products.
- Recycling: The company is committed to recycling its products and packaging materials. CA UK has partnered with recycling facilities to ensure that its products are disposed of in an environmentally responsible way.
- Carbon offsetting: CA UK has committed to offsetting its carbon emissions by investing in renewable energy and carbon reduction projects.

CA's motivation for implementing SSCM practices stemmed from a desire to reduce costs, improve its reputation, and respond to stakeholder demands. The main barriers to implementing SSCM practices were a lack of understanding of the benefits, a lack of financial resources, and a lack of buy-in from senior management. However, enablers such as government regulations, pressure from stakeholders, and partnerships with suppliers were identified as essential for the successful implementation of SSCM practices. This will be presented with supporting quotes in the cross-analysis section.

Figure 9: Company A operations structure (provided by the firm)



4.3.2 Case Study Two (Company B)

Company B (CB) is a Finnish multinational company that operates in the pulp and lumber industry. Established in 1998, the company currently employs over 22,000 people worldwide. CB aims to develop and produce solutions based on wood and biomass for various industries. The company supports its customers by providing renewable and eco-friendly products.

CB is committed to the development of products and technologies based on renewable materials, which in many cases, provide a low-carbon alternative to products made from fossil-based or other non-renewable materials. The company's vision is to lead the way towards a renewable future and to become a global leader in sustainable solutions.

CB's supply chain system is complex and comprises various stages, including the sourcing of raw materials, manufacturing, transportation, and distribution. The company works with suppliers to ensure they comply with its sustainability standards and codes of conduct. The company also encourages suppliers to implement sustainable practices in their operations.

CB's sustainable practices are based on the principles of the circular economy, which involves minimising waste and maximising the use of resources. The company has set ambitious targets to reduce its environmental impact and improve its sustainability performance. Some of the sustainable practices implemented by CB include:

- Using renewable energy sources such as biomass, hydropower, and wind power to reduce its carbon footprint.
- Investing in research and development to develop new products and technologies that are more sustainable.
- Implementing sustainable forestry practices to ensure the responsible management of forests.
- Minimising waste and optimising the use of resources by recycling and reusing materials wherever possible.
- Working with suppliers to promote sustainable practices and ensure compliance with sustainability standards and codes of conduct.

CB recognises the importance of sustainability for its business operations and growth. The company understands that sustainable practices can improve its reputation, reduce its environmental impact, and increase customer loyalty. CB has identified the potential financial benefits of sustainable practices, such as cost savings from reduced waste and improved efficiency.

In the cross-analysis section, CB's motives, barriers, and enablers will be presented with supporting quotes from respondents interviewed, reports provided by the firm, and secondary data available online and on their website.

4.3.3 Case Study Three (Company C)

Company C (CC) is a construction company that was established in 1985 in Amman, Jordan. The company has grown over the years to become one of the leading providers of heating systems, air conditioning systems, plumbing materials, fixing systems, power tools, renewable energy, and energy efficiency solutions in the Middle East. CC has embraced sustainable construction practices across its operations. The company's commitment to sustainability is reflected in its energy-efficient systems, water conservation measures, use of sustainable materials, waste reduction programs, and community outreach initiatives.

Sustainable Practices: CC is committed to sustainable practices and has adopted several initiatives to reduce its environmental impact. The firm has implemented a comprehensive recycling program that collects and recycles waste materials such as paper, plastic, and cardboard. Additionally, CC has introduced energy-efficient lighting systems and has implemented policies to reduce its carbon footprint, such as encouraging the use of public transportation among its employees.

The motivation for CC to embrace sustainable practices stems from its commitment to corporate social responsibility and environmental stewardship. The firm recognises that its operations have an impact on the environment and is committed to minimising this impact. Additionally, CC has recognised that implementing sustainable practices can have a positive impact on its bottom line by reducing costs and increasing efficiency.

CC has faced several barriers when implementing sustainable construction practices, including the high cost of sustainable materials and lack of awareness and knowledge about sustainable construction practices. However, the company has also identified several enablers that have helped it overcome these barriers, including government regulations, partnerships with suppliers, and employee training programs.

CC has embraced sustainable construction practices across its operations. The company's sustainability practices include the following:

- Energy Conservation: CC has implemented energy-efficient systems in its buildings, including LED lighting, solar panels, and energy-efficient HVAC systems. The company also uses energy-efficient construction materials to reduce energy consumption.

- Water Conservation: The company has implemented water conservation measures in its buildings, including low flow plumbing fixtures and rainwater harvesting systems.
- Sustainable Materials: CC uses sustainable materials in its construction projects, including recycled materials, low-VOC paints, and FSC-certified wood.
- Waste Reduction: The company has implemented waste reduction programs in its construction sites to minimise waste generation and promote recycling.
- Community Outreach: CC has implemented community outreach programs to promote sustainability and raise awareness about the importance of sustainable construction practices.

Supply Chain: CC operates a complex supply chain to support its diverse business operations. The company sources materials and products from various suppliers, both domestic and international, and distributes them through its retail and construction channels. CC's supply chain is a critical component of its business operations, enabling the company to source high-quality products and materials for construction operations. The company's focus on supplier relationships, quality management, and logistics planning has helped to ensure the efficient and effective operation of its supply chain.

In its construction operations, CC sources materials and products from various suppliers to support its heating systems, air conditioning systems, plumbing materials, fixing systems, power tools, and renewable energy and energy efficiency solutions. The company works with suppliers to ensure that materials meet the required quality standards and specifications.

To manage its supply chain operations, CC has implemented various strategies, including supplier evaluation and selection, supplier performance monitoring, inventory management, and logistics planning. The company also has a dedicated procurement team that is responsible for managing the procurement process and maintaining relationships with suppliers.

CC's commitment to sustainability is reflected in its supply chain, main aim, and sustainable practices in the construction industry. The organisation has implemented several sustainable practices across its operations, including energy conservation, waste reduction, sustainable sourcing, recycling, and community outreach. These practices have helped the organisation reduce its environmental impact and improved its reputation as a socially responsible business.

The Cross-Case analysis will present the data objectively by providing interview quotes from all three cases. They will be grouped under the themes that have emerged from the interviews, reports and secondary data collected. In Chapter 4, the findings from this chapter will be discussed and critically examined.

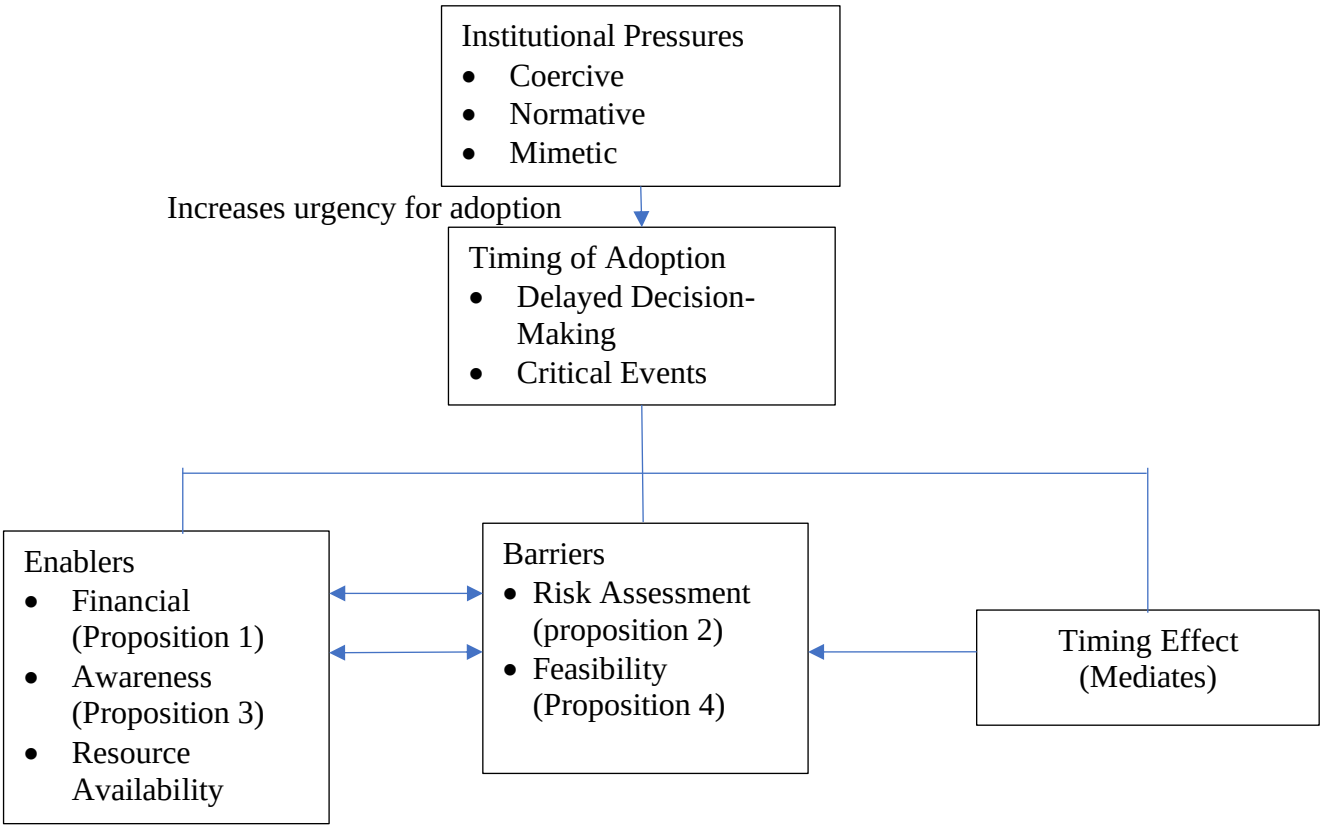
4.4 Coding Process

In this section, we present the coding process used to analyse the qualitative data collected for this study. The analysis follows the Gioia method, a widely recognised approach in qualitative research, for analysing and interpreting complex inductive data. This method was employed to organise and analyse the data from the three case studies. Which included interview transcripts, field observations, and other qualitative sources, facilitating a detailed understanding of the factors influencing firms' decisions regarding the timing of their adoption of SSCM practices.

In the context of this study the Gioia method played a crucial role in understanding factors influencing firms; decisions regarding the timing of their adoption of SSCM practices. Through this approach, the study identifies key themes that reveal how both external pressures (e.g. regulatory requirements, societal expectations) and internal factors (e.g. financial constraints, organisational culture) interact to shape the timing of sustainability decisions.

This process was closely aligned with the conceptual framework presented in Figure 10, ensuring that the analysis addresses the core elements of the study: institutional pressures, internal enablers and barriers, and timing of adoption.

Figure 10: Conceptual Framework



The Gioia method is particularly suited for this research due to its ability to develop theory inductively from qualitative data. By systematically breaking down raw data into manageable components, the Gioia method facilitates he emergence of new theoretical insights. It emphasises transparency, rigor, and a close connection between data and theory, ensuring that the analysis remains grounded in the interviewees' perspectives. The Gioia method includes several phases: open coding, thematic analysis, and aggregation into broader theoretical dimensions.

The coding structure was focused specifically on delay in adoption of SSCM practices within the focal firm. Looking at when firm choose to adopt and operational factors the influenced those decision. This ensures that the analysis remained centred on the timing and delay of adopting sustainable practices.

The researcher approached the data, by identifying barriers or influences specific to the delay in adopting sustainable practices within the firms' operations, while grouping the data around timing choices and institutional pressures (regulatory requirements, industry practices…). This was followed by developing clear links to operational barriers/enablers related to when and why firms decide to adopt. Below is a more in-depth explanation of the researchers coding process:

4.4.1 Initial Open Coding: Identification of Core Concepts

In this first stage of analysis, the data was thoroughly examined using open coding to identify key concepts and categories. The researcher engaged deeply with the data, reading and re-reading the interview transcripts to become fully familiar with the content. The coding process was guided by the participants' own language and terminology, with the aim of staying true to their meanings and avoiding any imposition of preconceived theoretical ideas. This stage involved identifying and labelling direct statements, terms, and phrases used by the interviewees, focusing purely on their expressions without adding interpretive layers. The primary goal was to preserve the participants' voices, ensuring their perspectives were represented in the analysis.

By breaking the raw data into manageable units—such as individual quotes, ideas, or recurring patterns—the researcher began to uncover factors influencing the adoption of SSCM practices. Particular attention was paid to both external pressures (such as regulatory requirements, societal expectations, or industry norms) and internal factors (like financial resources, organisational culture, or leadership support) that could influence a firm's decision-making process. This approach ensured that the analysis stayed grounded in the participants' experiences and perspectives, offering rich insights into the factors that shape SSCM adoption.

4.4.2 Second-Order Themes: Grouping and Organising Concepts

Once first-order concepts were identified, the researcher began to group them into broader categories. This step involves interpreting the data and identifying patterns or relationships among the concepts. This phase of coding sought to uncover relationships between different factors, with particular attention to how institutional pressures and internal enablers and barriers influence the timing of adoption.

4.4.3 Aggregation into Broader Dimensions

After identifying second-order themes, the researcher condensed them into overarching themes that provide a theoretical understanding of the data. These dimensions map directly to the components of the conceptual framework in Figure 10, such as institutional pressures, timing of adoption, and enablers and barriers.

For example:

- Institutional Pressures → Timing of Adoption: Strong coercive pressures (such as regulatory mandates) were found to accelerate adoption. However, weak normative or mimetic pressures led to delays, as firms hesitated until they perceived these pressures as more urgent or unavoidable.
- Enablers and Barriers ↔ Timing of Adoption: Positive enablers (e.g., financial incentives, knowledge of sustainable practices) reduced decision-making time, facilitating quicker adoption. Conversely, barriers (e.g., lack of resources, internal resistance) prolonged the evaluation and decision-making processes.

These dimensions were synthesised to reflect how timing mediates the relationship between institutional pressures and internal conditions, influencing when firms choose to implement sustainable practices.

4.4.4 Theoretical Coding: Connecting Data to the Conceptual Framework

In the final phase, the coded data were analysed through the lens of institutional theory, which provides a framework for understanding how external pressures and internal dynamics interact to shape the timing of adoption. Institutional theory suggests that organisations are influenced by both coercive (e.g., laws and regulations), normative (e.g., professional standards), and mimetic (e.g., imitating successful peers) pressures, which in turn affect their decision-making timelines.

This stage allowed for a deeper understanding of how timing mediates the relationship between institutional pressures and SSCM adoption. For example, firms in highly regulated

industries (coercive pressures) may adopt SSCM practices early in response to regulations, whereas firms with lower levels of external pressure may delay adoption until they perceive such pressures as unavoidable or until they have the necessary resources and internal readiness to act.

By connecting the dimensions derived from the data to the theoretical constructs in the conceptual framework, the coding process contributed to the development of a refined theoretical model that links institutional pressures and timing of adoption with enablers and barriers in a dynamic, interactive framework.

4.5 Detailed Coding Framework

The coding process was carried out manually and using Excel, which enabled close engagement with the data. The researcher iterated through the coding process multiple times, refining categories and dimensions as new insights emerged. Each stage of coding was followed by peer review to ensure that the interpretations were valid and aligned with the data.

4.5.1 First-Level Coding (1st-Order Concepts)

During this stage, the researcher identified specific phrases and keywords from the quotes shared, coding them as concrete concepts. Each statement was categorised based on the language used by participants, aiming to stay close to their original wording.

For example:

- *"Submit recyclable materials returns"* → Compliance Requirements
- "*Complexity and cost associated with implementing sustainable practices"* → Implementation Complexity
- *"Significant resources and expertise"* → Resource Demands
- *"Convincing suppliers to adhere to sustainable practices"* → Supplier Commitment
- "*Enabling them to effectively integrate sustainability initiatives"* → Technological Capability
- *"Return of products incurs costs"* → Cost of Product Returns
- *"Incentivise retailers to have lower returns"* → Retailer Incentives
- *"Collaborate with youth in innovative programs"* → Social Engagement in Sustainability
- *"Proactive approach to lead industry standards"* → Leadership in Sustainability

4.5.2 Second-Level Coding (2nd-Order Themes)

After the first-level coding, the researcher began identifying patterns in the data and grouped related codes into broader second-level themes. This process was iterative, as each new round of coding

revealed deeper layers of meaning, allowing themes to emerge that reflected the underlying motivations and concerns of the participants. The themes captured the underlying issues or motivations expressed in the data. Total of seven second level codes were produced at the end of the analysis, each of the codes are explained below. At the end of the section Table 8 provides a list of example quotes used for the first and second level codes.

4.5.2.1 Regulatory Compliance and Reporting

This theme reflects the pressures and challenges companies face in meeting regulatory requirements, reporting on sustainability metrics, and adhering to industry standards. Firms often need to balance strict compliance with limited resources and deal with overlapping certifications, which adds complexity. Moreover, insufficient enforcement of regulations can discourage widespread adoption of sustainable practices.

Regulatory compliance is a cornerstone of sustainable supply chain management, although it comes with challenges. For instance, companies are required to submit detailed reports on recyclable materials and packaging (e.g., "*We submit once a year our recyclable materials returns... based on how much of the packaging has come from manufacturing and how much of that is sustainable and recyclable." – Expert 2, CA).* Yet, navigating multiple standards can be overwhelming, especially for smaller firms with limited resources, as noted by Expert 1: "Because even for small owners, it is quite expensive to get certified; it requires a lot of admin work which they may not have time for." *The lack of robust enforcement also weakens compliance, with stakeholders highlighting that stricter penalties might drive faster progress: "Unless companies are told if you don't hit this target, we are going to fine you a million pounds, they're just like, why are we bothering to do it."* (Expert 2, CC).

4.5.2.2 Supply Chain Engagement and Collaboration

Engaging suppliers and collaborating across industries is crucial for implementing sustainable practices. Suppliers may lack resources to comply with sustainability criteria, which hinders progress. Collaboration through platforms and industry initiatives can enhance efforts by fostering shared goals and pooling resources.

Collaboration across the supply chain is critical for achieving sustainability goals, but supplier engagement remains a significant challenge. "*Sometimes, the challenge lies in convincing suppliers to adhere to sustainable practices... if our suppliers are not fully committed or lack the necessary resources, it becomes a constant struggle"* (Expert 1, CB). However, leveraging cross-industry platforms and partnerships can drive progress, as illustrated by the use of global collaborations like

the WBCSD: *"We just finished with the world business council, the SDG road map for the forest sector*" (Expert 1, CB). Such efforts highlight the potential of collaborative frameworks in addressing resource constraints and enhancing compliance across supply chains.

4.5.2.3 Technology and Innovation

Technology and innovation play a pivotal role in optimising supply chains and reducing environmental impacts. Advanced tools like blockchain, emission-monitoring systems, and data analytics enable firms to enhance traceability, minimise waste, and identify inefficiencies.

Firms are increasingly turning to technology and innovation to improve their sustainability practices. Tools such as data analytics are helping organisations track their progress and streamline operations: "*Tesco has a robust analytical infrastructure and data-crunching capabilities, enabling them to effectively integrate sustainability initiatives*" (Expert 1, CB). Innovations like blockchain are also revolutionising traceability: "*By adopting advanced technologies, we can track and manage our products more effectively, minimising waste and enhancing sustainability*" (Expert 2, CA). These developments underscore the transformative potential of technology in achieving efficient and sustainable supply chain operations.

4.5.2.4 Organisational Culture and Accountability

Embedding sustainability into organisational culture requires a shift in mindset and active engagement at all levels. Accountability is strengthened by integrating sustainability goals into performance metrics and decision-making frameworks.

Creating a sustainability-driven culture is vital for long-term success. Organisations need to ensure that sustainability is woven into their values and processes: *"What is important, indeed, is for a company to be sustainable, to sort of tie these values to the organisation"* (Expert 1, CB). Employee engagement is also essential: "I think that definitely more employee engagement, in terms of 'Hey, this is what we are doing and be part of our projects'" (Expert 4, CA). Additionally, accountability is reinforced when sustainability metrics influence performance evaluations: "*The finance function has allowed us to make better decisions towards optimising the range and getting the new release values out better*" (Expert 2, CA).

4.5.2.5 Market Trends and Consumer Demand

Market dynamics and consumer preferences are driving companies to adopt sustainable practices. As consumers demand eco-friendly products, organisations are pressured to innovate and offer greener alternatives.

Consumer demand for sustainable products has become a powerful driver of change. "*More and more our customers are demanding transparency regarding our sourcing practices*" (Expert 3, CA). This shift compels firms to align with market trends and invest in sustainable innovation. Retailers also see opportunities for differentiation through green initiatives, which further promotes the adoption of eco-friendly practices across industries.

4.5.2.6 Operational Challenges and Waste Management

Managing operational inefficiencies and minimising waste are key challenges in sustainable supply chain management. Returns, inventory management, and forecasting inaccuracies often result in excess waste and increased costs.

Operational inefficiencies are a persistent hurdle in sustainability efforts. The impact of product returns, for example, creates significant challenges: *"When a product is no longer part of a promotion, it often returns to us... This cycle incurs costs"* (Expert 3, CC). Companies are exploring innovative solutions to minimise waste, such as better forecasting and inventory management: *"We are working now on a bit more aggressive way of managing returns, to stop all the stock coming back"* (Expert 3, CA). These strategies highlight the importance of addressing inefficiencies to achieve sustainable operations.

4.5.2.7 Financial and Resource Barriers

High costs and resource limitations hinder firms, especially smaller organisations, from fully adopting sustainable practices. A cost-benefit analysis often dictates the pace of sustainability adoption, affecting long-term progress.

The financial burden of sustainability remains a critical barrier for many firms. Smaller companies, in particular, struggle with the costs of certifications and resource requirements*: "Because even for small owners, it is quite expensive to get certified; it requires a lot of admin work"* (Expert 1, Recycling firm for CA). Even larger firms face challenges when assessing the cost-benefit balance: *"We could make boxes out of cardboard, of course, we could, but economically what do the suppliers of those discs then do?"* (Expert 4, CA). Overcoming these barriers requires targeted incentives and innovative funding mechanisms to support sustainability initiatives.

Table 8: Example quotes of First & Second Level Coding

Quote	First-Level Coding	Second-Level Coding	Source
"We submit once a year our recyclable materials returns... We basically have to give them return numbers based on how much of the packaging has come from manufacturing and how much of that is sustainable and recyclable."	Reporting recyclable materials	Regulatory compliance and reporting	Expert 2, CA
"One of the main challenges firms face in complying with industry standards and certifications is the complexity and cost associated with implementing sustainable practices throughout the supply chain."	Challenges of compliance	Regulatory compliance and reporting	BASE-CEO
"Because even for small owners, it is quite expensive to get certified; it requires a lot of admin work which they may not have time for."	Certification cost for small owners	Regulatory compliance and reporting	Expert 1, Recycling firm for CA
"Meeting the requirements of multiple standards and certifications can be overwhelming for companies, requiring significant resources and expertise."	Overwhelming standards	Regulatory compliance and reporting	Expert 2, CC
"The whole process is... When [head of sustainability] comes in, she can speak to that in a bit more detail. The whole of [CA] is ISO 14001. Um, that does not mean it is perfect. I just mean that we follow a number of guidelines and rules."	Adherence to ISO standards	Regulatory compliance and reporting	Expert 2, CA
"Sometimes, the challenge lies in convincing suppliers to adhere to sustainable practices. We may have a set of criteria and standards	Supplier commitment challenges	Supply chain engagement	Expert 1, CB

in place, but if our suppliers are not fully committed or lack the necessary resources, it becomes a constant struggle to ensure sustainable sourcing."		and Collaboration	
"Tesco has a robust analytical infrastructure and data-crunching capabilities, enabling them to effectively integrate sustainability initiatives. On the other hand, retailers like Asda face resource and time constraints, leading to suboptimal implementation."	Analytical infrastructure as a driver	Technology and Innovation	Expert 1, CB
"When a product is no longer part of a promotion, it often returns to us. Our team then has to refurbish and repackage it before it can be sold again. However, in a few months, another promotion might arise, leading to the return of the product once more. This cycle incurs costs, and some retailers, like Asda or Walmart, operate a one-way stock system, compounding the challenge."	Product return and rework cycles	Operational Challenges & waste Management	Expert 3, CC
"It does get talked about a lot; there is always a project going on, where they are trying to reduce something or change processes."	Process improvement discussions	Organisational culture and accountability	Expert 4, CA
"We can't make a unilateral decision to do one thing without it being approved by the whole of the industry body or the retailers."	Industry-wide approval challenges	Supply Chain Engagement & Collaboration	Expert 2, CA
"Through research, education, and advocacy, industry organisations raise awareness about the importance of	Advocacy and awareness	Organisational culture and accountability	Expert 1, CB

sustainability and drive positive change in supply chain operations."			
"Unless someone says right, we are going to make DVD and things, packaging illegal - I don't think things are going to change."	Regulatory enforcement necessity	Regulatory compliance and reporting	Expert 4, CA
"Unless companies are told if you don't hit this target, we are going to fine you a million pounds, they're just like, why are we bothering to do it."	Financial penalties for non-compliance	Regulatory compliance and reporting	Expert 2, CC
"We've not so long ago developed our science-based targets... And we have a commitment to work with our supply chain to address climate change. We are increasingly working with our suppliers to address their emissions."	Science-based targets and supplier collaboration	Supply chain Engagement & Collaboration	Expert 1, CB
"We are exploring partnerships with organisations that can help us optimise our supply chain and reduce waste."	Partnerships for waste reduction	Supply chain Engagement & Collaboration	Expert 2, CA
"There might be opportunities with the EDC with sustainability."	Exploring sustainability opportunities	Supply chain Engagement & Collaboration	Expert 3, CA
"We are encouraging all record labels, film distributors and games publishers to join ERA members under a shared industry goal to commit to not only the eradication of single-use plastics but also to explore alternative packaging solutions to meet our target of banning all non-biodegradable shrink-wrapped entertainment product by 2020."	Single-use plastics eradication	Regulatory Compliance & Reporting	Email correspondence, CA

"We are working collaboratively in several platforms, and we are coaching the forest solutions group, which is sort of an industry collaboration, WBCSD banner."	Coaching and collaboration efforts	Supply chain Engagement & Collaboration	Expert 1, CB
"We just finished with the world business council, the SDG road map for the forest sector. And this is before I joined, but they worked on responsible procurements for wood and fibre."	SDG roadmap for forest sector	Supply chain Engagement & Collaboration	Expert 1, CB
"One of the challenges is simply the time to work through and coordinate with all suppliers to meet these sustainability targets."	Time constraints in supplier coordination	Supply chain Engagement & Collaboration	Expert 1, CB
"With a more proactive approach, we can lead the industry in sustainable practices and set new standards."	Proactive leadership in sustainability	Organisational culture & accountability	Expert 4, CA
"It's the biggest challenge in our area of the forest is where you don't always have access to sustainable suppliers, so you need solutions for sourcing sustainable products."	Access to sustainable suppliers	Supply chain Engagement & Collaboration	Expert 2, CA
"The cost of implementing sustainable practices, such as upgrading equipment or adopting new technologies, is a significant barrier for many companies."	Cost of adopting technologies	Financial & Resource Barriers	BASE-CEO
"We are increasingly looking at offsetting as part of our strategy to combat climate change."	Offsetting strategies	Organisational culture & accountability	Expert 1, CB

"It's a matter of making sure people feel accountable and are motivated to make sustainable decisions."	Accountability in decision-making	Organisational culture & accountability	Expert 3, CA
"Adopting advanced technologies enables us to monitor our carbon footprint and optimise production processes more effectively."	Advanced technology for monitoring	Technology and Innovation	Expert 1, CB
"We're seeing more cross-industry collaborations to share best practices and innovative solutions."	Sharing best practices	Supply chain Engagement & Collaboration	BASE-CEO
"Thinking outside the box and being adaptable are essential qualities for successful supply chain management."	Adaptability in supply chain	Organisational culture and accountability	Expert 3, CA
"We've seen growing interest from consumers in more eco-friendly packaging, which is driving changes in how we design and distribute products."	Consumer-driven change	Market Trends, and consumer demands	Expert 1, CB
"It's important for organisations to integrate sustainability metrics into their overall performance assessments."	Sustainability in performance metrics	Organisational culture and accountability	Expert 2, CA
"To have the view that waste is being prevented, that products are recycled, it's about educating."	Educating for recycling awareness	Organisational culture and accountability	Expert 3, CA
"It requires a shift in mindset across the organisation to embed sustainability into the culture."	Embedding sustainability culture	Organisational culture and accountability	Expert 4, CA

"There are opportunities to use data to identify inefficiencies in the supply chain and address them proactively."	Data-driven supply chain improvements	Technology and Innovation	Expert 2, CA
"Employee engagement is crucial; involving them in sustainability projects helps create a sense of ownership and accountability."	Employee engagement in sustainability initiatives	Organisational culture and accountability	Expert 3, CA
"We face challenges with demand forecasting, especially when promoting sustainable products, as consumer preferences can be unpredictable."	Demand forecasting challenges	Operational inefficiencies	Expert 4, CA
"Our logistics team has implemented route optimisation software, significantly reducing fuel consumption and emissions."	Route optimisation	Technology and Innovation	Expert 1, CB
"We've adopted blockchain to enhance traceability in our supply chain, ensuring that materials come from verified sustainable sources."	Blockchain for supply chain traceability	Technology and Innovation	Expert 1, CB
"It's not just about cutting costs but about creating value through sustainable practices."	Value creation through sustainability	Financial and Resource Barriers	Expert 1, CB

4.5.3 Aggregate Dimensions

Following the identification of second-order themes, the next step was to synthesise these into higher-level aggregate dimensions. These dimensions provide a comprehensive framework that bridges the theoretical constructs with the empirical data, highlighting the interplay of institutional pressures, barriers to adoption, and enablers for sustainability.

This section synthesises the second-order themes identified in the data into overarching dimensions, which represent higher-level constructs that reflect both the conceptual framework, and factors influencing the adoption of SSCM practices. These dimensions, which represent the structural and

conceptual underpinnings of the adoption process, align closely with the core constructs of the theoretical framework guiding this study: Institutional Pressures, Barriers to Adoption, and Enablers for Sustainability. These constructs encapsulate the complex and dynamic interplay between external and internal factors influencing firms' decisions regarding the adoption of sustainable supply chain management (SSCM) practices.

Institutional Pressures

Themes related to coercive, normative, and mimetic pressures were organised to reflect how external forces push firms toward accelerated adoption or contribute to delays. For example, firms facing strong regulatory pressures were more likely to adopt SSCM practices sooner, whereas firms experiencing weaker societal expectations (e.g., low public visibility or absence of legal penalties) exhibited more hesitation and delays in adopting sustainable practices.

Internal Enablers and Barriers

Themes related to financial incentives, resource availability, and organisational culture were explored to determine how these factors either support or hinder the adoption process. For example, firms with dedicated sustainability departments or higher levels of financial capital were more likely to implement SSCM practices sooner, while those with limited resources or internal resistance (e.g., lack of leadership commitment or financial incentives) faced barriers that slowed down adoption.

Figure 11: Main Themes and Subthemes

The following aggregate dimensions emerged as higher-order constructs that bridge the theoretical concepts of institutional pressures, internal enablers, and barriers, and illustrate how they shape the timing of SSCM adoption decisions each of the themes will be explained and further analysed in the following sections.

Theme 1: Organisational Barriers to Adoption – High Costs, Administrative Complexities, and Supplier Challenges Impede Timely Adoption

Subthemes:

- **Cultural Resistance**: Resistance to change from employees or departments within the organisation.
- **Fear of Financial Impact**: Concerns about the immediate costs of adopting sustainable practices.
- **Lack of Awareness or Knowledge**: Gaps in knowledge about sustainability and its benefits or how to implement it.
- **Inflexible Organisational Structures**: Organisational hierarchies or rigid structures that delay decision-making related to sustainability.

Theme 2: Supplier Collaboration – Strong Supplier Relationships and Partnerships Drive Adoption Timing

Subthemes

- **Supply Chain Coordination:** How firms work with suppliers to adopt sustainable practices along the value chain.
- **Joint Initiatives with Partners:** Collaboration between firms and stakeholders (suppliers, customers, industry associations) to promote sustainability.
- **Supplier Pressure and Engagement:** The influence of suppliers pushing for or resisting sustainability efforts.
- **Transparency in Supply Chain**: Efforts to ensure transparency in the sourcing of materials and ethical practices across the supply chain.

Theme 3: Advocacy and Industry Standards – Industry Regulations and Standards Influence the Timing of Adoption

Sub-themes

- **Regulatory Pressure**: How local, regional, and global regulations create urgency or delays for firms.
- **Industry Standards and Certifications**: The adoption of standards like ISO, LEED, etc., and how they affect the pace of adoption.

- **External Advocacy and Stakeholder Influence**: How pressure from NGOs, customers, and stakeholders accelerates or impedes sustainability efforts.
- **Public Policy and Incentives**: The role of government policies, incentives, or subsidies in influencing sustainability decisions.

Theme 4: Organisational Initiatives and Innovation – Internal Projects and Technological Innovation Accelerate SSCM Adoption

Sub-Themes:

- **Leadership and Strategic Vision**: The role of top management in prioritising sustainability initiatives.
- **Innovation in Processes**: The development and implementation of new processes, technologies, or systems to enable sustainability.
- **Internal Barriers to Innovation**: Cultural resistance, lack of knowledge, or fear of failure slowing down innovation efforts.
- **Investment in R&D**: Allocating resources to sustainable innovation and research for long-term growth.

Theme 5: Resource Constraints and Timing Challenges – Resource Limitations Create Barriers to Immediate Action

Sub-Themes**:**

- **Financial Constraints**: Delays in securing funds for sustainability initiatives.
- **Operational Constraints**: Resource allocation issues and capacity limits in adopting sustainable practices. Shortages of skilled personnel and expertise delaying the integration of sustainable practices.
- **Technological Barriers**: Challenges in accessing or deploying necessary technologies for sustainable operations.

These aggregate dimensions facilitated understanding the complex relationship between institutional pressures and internal enablers and barriers, which shaped the timing of adoption decisions. By integrating both external and internal perspectives, the study highlights the dynamic and multifaceted nature of adoption decisions. The interplay between coercive, normative, and mimetic pressures from the external environment, combined with the internal challenges and enablers within the organisation, creates a highly contingent decision-making process that varies across industries, firm sizes, and

geographic contexts. Ultimately, these dimensions offer a comprehensive framework for understanding how firms navigate the adoption of sustainable practices, as they balance the demands of external stakeholders with their internal capacities and strategic priorities.

4.6 Emergence of Themes

The findings from the interviews and case studies highlighted five key aggregate dimensions influencing the timing of SSCM adoption. These dimensions include organisational barriers, supplier collaboration, advocacy and industry standards, organisational innovation, and resource constraints. They reveal how institutional pressures, internal challenges, and enablers interact to shape decision making. Each of the themes was analysed in relation Institutional Theory, particularly the role of timing in organisational adoption to sustainability.

4.6.1 Description of Key Themes with supporting quotes

4.6.1.1 Theme 1: Organisational Barriers to Adoption

This dimension reflects the internal challenges faced by firms during the adoption process. High upfront costs, complex administrative processes, and the need for substantial supplier commitment were frequently cited as significant challenges that delayed SSCM implementation. Firms often struggle with the financial burden of transitioning to sustainable practices, particularly when the benefits are perceived as long-term or uncertain. Similarly, the administrative complexities associated with reconfiguring supply chains to align with sustainability goals (including monitoring, reporting, and compliance) can further delay the adoption process. The resistance from suppliers—who may lack the motivation, resources, or capacity to meet sustainability requirements—also presents a critical barrier to timely adoption.

Supporting Quotes:

- *"We submit once a year our recyclable materials returns... We basically have to give them return numbers based on how much of the packaging has come from manufacturing and how much of that is sustainable and recyclable." (Expert 2, CA)*
- *"One of the main challenges firms face in complying with industry standards and certifications is the complexity and cost associated with implementing sustainable practices throughout the supply chain." (BASE-CEO)*
- *"Because even for small owners, it is quite expensive to get certified; it requires a lot of admin work which they may not have time for." (Expert 1, Recycling firm for CA)*

- *"Meeting the requirements of multiple standards and certifications can be overwhelming for companies, requiring significant resources and expertise." (Expert 2, CC)*
- *"The whole process is... When [head of sustainability] comes in, she can speak to that in a bit more detail. The whole of [CA] is ISO 14001. Um, that does not mean it is perfect. I just mean that we follow a number of guidelines and rules." (Expert 2, CA)*
- *"Sometimes, the challenge lies in convincing suppliers to adhere to sustainable practices. We may have a set of criteria and standards in place, but if our suppliers are not fully committed or lack the necessary resources, it becomes a constant struggle to ensure sustainable sourcing." (Expert 1, CB)*

Internal barriers significantly impact SSCM adoption, with costs, administrative demands, and supplier challenges acting as central impediments. Firms often postpone adoption until these challenges are mitigated.

4.6.1.2 Theme 2: Supplier Collaboration

A key enabler of SSCM adoption identified across the sample was the importance of strong supplier relationships and collaborative partnerships. This dimension emphasises the role of interorganisational collaboration, where firms work with suppliers, industry groups, and other stakeholders to create mutual value and overcome barriers to adoption. The extent to which firms can collaborate with their suppliers to share knowledge, pool resources, and jointly invest in sustainability initiatives was found to significantly influence the timing of adoption. For instance, firms that engaged in collaborative innovation with suppliers were often able to accelerate the implementation of SSCM practices, benefiting from shared investments in technology, training, and process reengineering. Conversely, firms with less collaborative engagement often struggled with delays as they faced resistance or lack of alignment from suppliers.

Supporting Quotes:

- *"Tesco has a robust analytical infrastructure and data-crunching capabilities, enabling them to effectively integrate sustainability initiatives. On the other hand, retailers like Asda face resource and time constraints, leading to suboptimal implementation." (Expert 1, CB)*
- *"When a product is no longer part of a promotion, it often returns to us. Our team then has to refurbish and repackage it before it can be sold again. However, in a few months, another promotion might arise, leading to the return of the product once more. This cycle incurs costs, and some retailers, like Asda or Walmart, operate a one-way stock system, compounding the challenge." (Expert 3, CC)*

- *"It does get talked about a lot; there is always a project going on, where they are trying to reduce something or change processes." (Expert 4, CA)*
- *"We can't make a unilateral decision to do one thing without it being approved by the whole of the industry body or the retailers." (Expert 2, CA)*

Time and resource limitations significantly impact the pace of adopting sustainability initiatives, especially in the context of SMEs, which may be unable to dedicate sufficient resources to sustainability efforts without clear immediate benefits. Collaboration is a double-edged sword—weak partnerships contribute to delays, while robust relationships facilitate timely adoption by aligning resources and goals.

4.6.1.3 Theme 3: Advocacy and Industry Standards

The advocacy and standardisation dimension captures the role of industry associations, regulatory bodies, and non-governmental organisations (NGOs) in influencing the adoption process. Industry bodies advocate for sustainability through awareness campaigns and establish standards that facilitate broader adoption. Regulatory frameworks—whether mandatory or voluntary—shape firms' behaviour and reduce uncertainty, helping them benchmark their progress. The timing of adoption depends on the speed of industry-driven initiatives and the perceived benefits for firms' competitive positioning.

Supporting Quotes:

- *"Through research, education, and advocacy, industry organisations raise awareness about the importance of sustainability and drive positive change in supply chain operations." (Expert 1, CB)*
- *"Unless someone says right, we are going to make DVD and things, packaging illegal - I don't think things are going to change." (Expert 4, CA)*
- *"Unless companies are told if you don't hit this target, we are going to fine you a million pounds, they're just like, why are we bothering to do it." (Expert 2, CC)*
- *"We've not so long ago developed our science-based targets... And we have a commitment to work with our supply chain to address climate change. We are increasingly working with our suppliers to address their emissions." (Expert 1, CB)*

External pressures such as regulatory enforcement and industry-wide collaboration play a significant role in driving firms toward adopting SSCM practices. However, the timing of these efforts is often contingent on the perceived severity of these pressures. Regulatory and advocacy efforts are critical in

shaping the timing of SSCM adoption. Clear standards and industry-wide collaboration reduce delays and drive timely implementation

4.6.1.4 Theme 4: Organisational Initiatives and Innovation

The adoption of new technologies and innovative practices is another driving force behind the timing of SSCM adoption. Internal initiatives and the capacity for innovation are critical in enabling firms to proactively implement SSCM practices. This dimension emphasises the importance of strategic alignment between sustainability goals and organisational objectives. Firms that have incorporated sustainability into their core strategic framework—often through the establishment of innovation hubs, cross-functional teams, or sustainability-focused leadership—tend to exhibit greater readiness for adoption. Moreover, firms that have a track record of technological innovation or continuous improvement in other areas are often more adept at integrating sustainability into their supply chain operations. In contrast, firms with rigid structures and limited capacity for innovation face greater difficulty in adopting SSCM practices.

Supporting Quotes:

- *"Investing in technology and innovation is crucial for improving efficiency and sustainability in our supply chain." (Expert 2, CA)*
- *"We need to leverage innovative technologies to optimise our supply chain and reduce environmental impacts." (Expert 2, CA)*
- *"By adopting advanced technologies, we can track and manage our products more effectively, minimising waste and enhancing sustainability." (Expert 2, CA)*
- *"It's important that when you are creating a culture of innovation, that it gets embedded in the business." (Expert 2, CA)*
- *"We need to have a shared understanding of our sustainability goals and collaborate effectively." (Expert 3, CA)*

Technological solutions can enable firms to streamline their supply chains, reducing waste and improving sustainability. However, firms often face challenges related to the upfront costs of adopting these innovations, which can delay their implementation. Proactive innovation enhances a firm's capacity to adopt SSCM practices, while rigid structures and high initial costs often delay adoption.

4.6.1.5 Theme 5: Resource Constraints and Timing Challenges

The final aggregate dimension focuses on resource constraints, particularly financial and human capital, as well as the challenges these pose to the timing of adoption. Firms with constrained resource;

whether financial, personnel, or technological find it difficult to prioritise sustainability initiatives, especially when these require significant upfront investment. The timing of adoption is often dictated by the availability of resources at critical moments, such as during budget cycles or in response to regulatory changes. Resource constraints can also influence firms' willingness to delay adoption until more favourable conditions arise, such as the availability of subsidies, financial incentives, or government support.

Supporting Quotes:

- *"We are working collaboratively in several platforms, and we are coaching the forest solutions group, which is sort of an industry collaboration, WBCSD banner." (Expert 1, CB)*
- *"We just finished with the world business council, the SDG road map for the forest sector. And this is before I joined, but they worked on responsible procurements for wood and fibre." (Expert 1, CB)*
- *"We do lots of training, work with various associations, and collaborate with youth who are a part of innovative programs. We assist our employees in furthering their education." (Expert 3, CA)*

Collaboration across firms and industries can accelerate the adoption of sustainable practices, but the timing of these initiatives is often tied to the level of industry engagement and the need for coordinated action. Resource constraints are a key determinant of SSCM timing, with firms delaying adoption until sufficient resources are available or external support mitigates initial costs.

4.6.2 Linking Themes to Research Questions

The analysis identified five dimensions (themes) central to understanding the delay in adopting sustainable supply chain management (SSCM) practices. This section elaborates on how these dimensions address the research questions by linking specific findings to the theoretical underpinnings and practical implications of SSCM adoption.

4.6.2.1 Theme 1: Organisational Barriers to Adoption

This theme focused on internal barriers within firms that delay the adoption of sustainable supply chain management (SSCM). Key barriers include high upfront costs, administrative complexities, and inadequate supplier commitment, which significantly impede progress.

RQ1 What are the underlying reasons for firms' delay in adopting sustainable practices within their supply chain?

Organisational barriers often serve as significant reasons for delays in SSCM adoption. High initial costs and administrative burdens are common themes across many responses. For instance, Expert 2 (CA) highlighted the complexity of reporting requirements:

"We basically have to give them return numbers based on how much of the packaging has come from manufacturing and how much of that is sustainable and recyclable."

This complexity increases administrative costs and creates delays in SSCM implementation. Similarly, Expert 1 (Recycling firm for CA) noted that small businesses often struggle with certification costs:

"It requires a lot of admin work which they may not have time for."

These internal challenges, coupled with limited resources, often delay adoption, as organisations tend to focus on more immediate concerns rather than long-term sustainability goals.

RQ2: What factors influence the timing of the adoption of sustainable supply chain practices?

The timing of SSCM adoption is deeply influenced by these organisational barriers. Organisations are more likely to delay adoption until clearer benefits are realised or resource constraints are eased. Expert 1 (CB) discussed how a lack of supplier commitment affects the pace of adoption:

"Convincing suppliers to adhere to sustainable practices becomes a constant struggle."

This prolonged effort to gain supplier support directly impacts the speed at which sustainable practices are adopted. These internal barriers lead to delays in SSCM adoption, as firms are more likely to postpone decisions until there is greater clarity on costs or when resources are more readily available.

4.6.2.2 Theme 2: Supplier and Collaborative Efforts

This theme highlights the role of supplier relationships and collaborative partnerships in influencing the adoption of SSCM. A lack of collaboration or weak supplier relationships can cause delays, while strong partnerships accelerate adoption.

RQ2 What factors influence the timing of the adoption of sustainable supply chain practices?

Delays in SSCM adoption often stem from a lack of supplier collaboration and coordinated industry efforts. Expert 1 (CB) d escribed the difficulty of managing a one-way stock system without collaborative efforts:

"Some retailers operate a one-way stock system, compounding the challenge."

This lack of mutual effort in implementing sustainable practices creates delays in adoption. Expert 2 (CA) pointed out the difficulties in making unilateral decisions without industry-wide consensus:

"We can't make a unilateral decision to do one thing without it being approved by the whole of the industry body."

Thus, weak supplier relationships or the absence of industry-wide coordination leads to delays.

Strong supplier collaboration can accelerate the timing of SSCM adoption. Expert 4 (CA) described how ongoing projects aimed at process improvements can facilitate faster adoption:

"There is always a project going on, where they are trying to reduce something or change processes."

Firms with established and cooperative partnerships are able to implement sustainable practices more quickly, as these relationships enable smoother integration of new practices.

Supplier collaboration plays a pivotal role in determining both the reasons for delays and the timing of SSCM adoption. Weak or absent partnerships delay the process, while strong collaborations accelerate the adoption of sustainable practices.

4.6.2.3 Theme 3: Advocacy and Industry Standards

This theme focuses on the impact of regulatory bodies, industry standards, and advocacy efforts in shaping the adoption of SSCM. Strong advocacy and clear industry standards often lead to faster adoption, while the absence of enforcement creates delays.

RQ1 What are the underlying reasons for firms' delay in adopting sustainable practices within their supply chain?

A lack of stringent regulatory enforcement and clear industry standards is a major reason for delay. Expert 4 (CA) stated:

"Unless someone says, 'We are going to make packaging illegal,' I don't think things are going to change."

Similarly, Expert 2 (CC) highlighted the lack of urgency in the absence of penalties:

"Unless companies are told, 'If you don't hit this target, we are going to fine you,' they're just like, 'Why are we bothering to do it?'"

Without strong mandates, firms do not feel compelled to prioritise sustainable practices, leading to delays in adoption.

RQ2 What factors influence the timing of the adoption of sustainable supply chain practices?

Advocacy and industry standards play a significant role in accelerating adoption. Expert 1 (CB) discussed how the development of science-based targets has sped up the process:

"We've developed our science-based targets and are increasingly working with our suppliers to address their emissions."

Industry-wide initiatives that provide clear guidance and set deadlines help organisations align their efforts, thus speeding up the timing of adoption.

The presence of strong advocacy and clear industry standards is crucial for both the reasons for delay and the timing of SSCM adoption. Delays often occur when regulatory frameworks are weak or non-existent, while industry initiatives accelerate the process.

4.6.2.4 Theme 4: Organisational Initiatives and Innovation

This theme explores the role of internal organisational projects, technological innovations, and cultural shifts in facilitating or hindering SSCM adoption.

RQ2 What factors influence the timing of the adoption of sustainable supply chain practices?

Organisations with rigid structures and limited capacity for innovation often experience delays in adopting SSCM practices. Expert 2 (CA) discussed the challenge of upfront costs associated with innovative technologies:

"Upfront costs of adopting these innovations can delay their implementation."

Furthermore, a lack of alignment between sustainability goals and organisational objectives contributes to delays, as organisations are slow to adopt changes that are not integrated into their overall strategy.

However, firms that foster a culture of innovation and proactively engage in internal projects tend to adopt SSCM practices more swiftly. Expert 3 (CA) highlighted how innovation becomes embedded in business practices:

"When you are creating a culture of innovation, it gets embedded in the business."

Technological innovations such as advanced tracking systems also enable faster adoption by improving efficiency:

"By adopting advanced technologies, we can track and manage our products more effectively, minimising waste."

Internal organisational initiatives and a culture of innovation are critical for both the timing and reasons for delay in adopting SSCM. Firms that lack innovation or alignment with sustainability goals often experience delays, while those that actively pursue innovation can adopt practices more quickly. Therefore, innovation and internal initiatives play a crucial role in both accelerating adoption and mitigating delays.

4.6.2.5 Theme 5: Resource Constraints and Timing Challenges

This theme addresses the impact of financial and human resource limitations on the timing of SSCM adoption. Limited resources often lead to delays, while resource availability can accelerate adoption.

RQ1 What are the underlying reasons for firms' delay in adopting sustainable practices within their supply chain?

Resource constraints, including both financial and human resources, are common reasons for delays. Expert 1 (CB) noted that SMEs face difficulties in prioritising sustainability initiatives due to the high upfront investment required:

"SMEs find it difficult to prioritise sustainability initiatives due to significant upfront investment requirements."

These resource limitations often prevent firms from adopting sustainable practices promptly, contributing to delay in the process.

RQ2 What factors influence the timing of the adoption of sustainable supply chain practices?

The timing of SSCM adoption is often linked to resource availability. Expert 3 (CA) observed that resource constraints, such as limited budget or lack of skilled personnel, can delay adoption of sustainable practices

> *"Collaboration across firms and industries can accelerate the adoption of sustainable practices, but the timing of these initiatives is tied to the level of engagement."*

Firms that can allocate sufficient resources to sustainability initiatives are able to implement practices more quickly, while those without adequate resources face delays.

Resource constraints play a significant role in both the reasons for delays and the timing of SSCM adoption. Financial and human resources are critical in determining whether organisations can prioritise and implement sustainable practices in a timely manner.

4.6.2.6 Conclusion

The refined analysis shows that all five themes—organisational barriers, supplier collaboration, advocacy and industry standards, organisational innovation, and resource constraints—directly impact both the reasons for delays and the timing of SSCM adoption. Internal barriers such as cost and supplier commitment slow down the process, while strong industry standards, innovation, and resource availability can accelerate it. Each theme is crucial for understanding the dynamics of SSCM adoption and provides insight into the factors that organisations must address to implement sustainable practices effectively and on time.

4.7 Chapter Summary

This chapter presented the key findings from the qualitative case study research addressing the research questions regarding motives, barriers, and timing of adopting SSCM practices. Using the systematic analysis and the Gioia method, the study uncovered critical factors shaping the adoption of sustainable practices. These factors, categorised operational constraints, institutional influences, and timing considerations reveal new insights into the dynamic of the SSCM practices adoption and the delays associated with implementing sustainable practices.

The analysis identified financial and operational challenges, such as high cost, technological limitation, and infrastructure gas as primary obstacles to SSCM adoption. As the same time, strong leadership and external pressures, including consumer demand and regulatory requirements emerged

as key accelerators, creating urgency for firms to act. These finding highlight the interplay between internal and external drivers shaping adoption timelines.

Key Findings are organised around elements of the initial conceptual framework:

- **Operational Constraints:** Financial and technological constraints were revealed as barriers to SSCM adoption, often delaying implementation.
- **Institutional Influences:** External pressures, such Regulatory pressures and market competition were found to drive adoption timelines, with consumer demand playing a pivotal role.
- **Timing Considerations:** Adoption is often gradual, with firms adopting SSCM practices in phases to mitigate risk and ensure long-term viability. This challenges the assumption that firms can quickly transition to sustainable practices.

These findings offer theoretical and practical implications:

- **Role of Leadership and External Pressures:** Strong leadership and external factors, such as market demand and regulatory pressures, are key enablers in overcoming delays in adoption. These findings contribute to broader discussions in the literature on institutional pressures and leadership roles in sustainability.
- **Operational and Institutional Interplay:** The findings highlight the complex interaction between operational constraints (cost, technology) and institutional pressures (regulations, peer pressure), shaping adoption strategies and timelines.
- **Timing Dynamics:** The study underscores timing as a critical yet unexplored dimension of SSCM adoption demonstrating the need for incremental strategies rather that immediate transitions.

Informed by these findings, the initial conceptual framework is revised to reflect the dynamic interplay between leadership, external pressures, and operational constraints in shaping adoption decisions. The findings suggest that both operational constraints and external pressures, such as consumer demand, play critical roles in shaping adoption timelines. The revised framework will incorporate these dynamic influences, particularly the role of leadership and the incremental nature of adoption. These adjustments along with study's implication, will be critically examined in the Discussion Chapter.

The Discussion Chapter, chapter will situate the findings within the broader context of existing research, highlighting areas of alignment and contradictions, and will present the revised framework to advance understanding of SSCM adoption.

In summary, this chapter outlined the key findings of the study, laying the foundation for a critical discussion of their theoretical and practical implications in the subsequent chapter.

5 Chapter V- Discussion

5.1 5.1 Introduction

This chapter provides a detailed interpretation and critical analysis of the study's findings in relation to the research questions and the conceptual framework. It aims to explore how the findings contribute to, challenge, or align with existing literature. The discussion is structured around the five key themes identified in the findings chapter, which were previously linked to the research questions.

As outlined earlier, the study addressed the following research questions:

- RQ1: What are the underlying reasons for firms' delay in adopting sustainable practices within their supply chain?
- RQ2: What factors influence the timing of the adoption of sustainable supply chain practices?

Each research question is examined in relation to the key themes, drawing on the data to explain how these findings refine our understanding of the conceptual framework.

The chapter begins with a thematic analysis, organised around the five key themes, which were introduced in the theoretical overview. This section includes an interpretation of the findings and their implications.

In addition, the chapter revisits and refines the initial conceptual framework presented in Chapter 2. The framework will be revisited by connecting the study's findings to the propositions derived from this framework. The analysis will explore how the findings support, refine, or contradict these propositions.

Subsequently, the conceptual framework will be revised based on the study's insights. The revised framework will incorporate new perspectives on the roles of leadership, external pressures, and operational constraints in shaping the timing and process of adopting sustainable supply chain practices.

The chapter will conclude with a summary of the key findings, before transitioning to the final chapter, which will provide the study’s conclusions.

5.2 Thematic Analysis of the Findings

The findings of this study suggest several factors that shape the timing and barriers to adopting Sustainable Supply Chain Management (SSCM) practices within organisations. This section critically analyses these findings in relation to the research questions, drawing on relevant literature and extending the institutional and resource-based view (RBV) in the context of SSCM adoption. The discussion is framed around the five key themes identified in the findings chapter. Each theme will be analysed in relation to the relevant research questions.

5.2.1 Theme 1: Organisational Barriers to Adoption

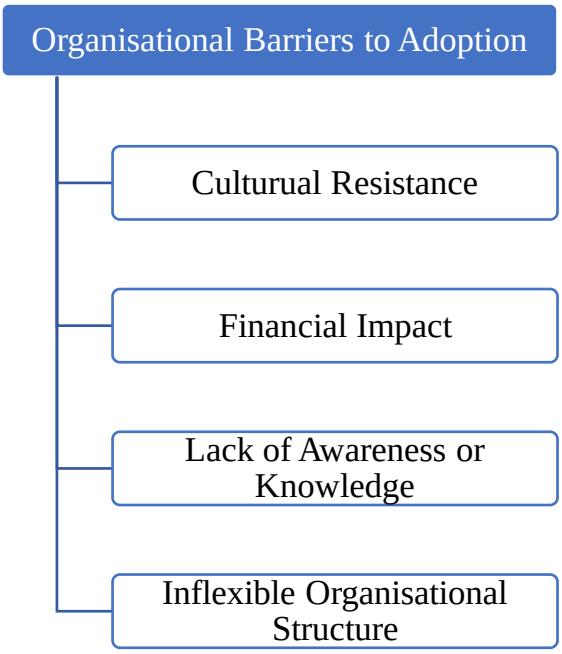
This theme highlights internal barriers within firms that delay the adoption of sustainable supply chain management (SSCM), including high upfront costs, administrative complexities, and inadequate supplier commitment.

Subthemes:

- **Cultural Resistance:** Resistance to change from employees or departments within the organisation.
- **Fear of Financial Impact**: Concerns about the immediate costs of adopting sustainable practices.
- **Lack of Awareness or Knowledge:** Gaps in knowledge about sustainability and how to implement it.
- **Inflexible Organisational Structures:** Organisational hierarchies or rigid structures that delay decision-making regarding sustainability.

Link to RQ1 & RQ2: This theme explores why firms delay adopting sustainable practices (RQ1) due to internal organisational barriers. It will be analysed in relation to how cultural resistance, financial concerns, and rigid structures impact the timing of adoption (RQ2), drawing on literature around organisational behaviour and decision-making.

Figure 12: Theme 1: Organisational Barriers to Adoption



5.2.1.1 Cultural Resistance

Cultural resistance emerged as a significant barrier to adopting SSCM practices, aligning with recent research (Zhu et al., 2021). Employees often resist incorporating sustainability into their daily tasks, viewing it as secondary to their primary responsibilities. This resistance prevents the widespread integration of sustainable practices and hampers the creation of a sustainability-oriented organisational culture. As Oreg et al. (2018) argue, resistance to change often arises from concerns about the disruption of established routines and fears of job insecurity, which can further delay the implementation of sustainability initiatives.

The findings of this study suggest that employees' resistance is rooted in perceived disruptions to existing workflows and concerns about additional workload or potential job loss. This aligns with Burnes (2020), who emphasises that resistance is not just about individual reluctance but is shaped by organisational culture, where sustainability is often not seen as a priority. These internal barriers highlight the need for firms to address the root causes of resistance by engaging employees in the sustainability process and communicating the long-term benefits of adopting SSCM practices.

The novel contribution of this study lies in its identification of cultural resistance as a structural issue, extending the understanding of resistance beyond individual reluctance. This insight contributes to RQ1 by illustrating those internal cultures, which prioritise routine operations over innovation, are key factors in delaying SSCM adoption. By addressing these cultural challenges, organisations can

reduce delays and accelerate the adoption of SSCM practices, offering valuable insights into both the reasons for delay (RQ1) and the factors influencing adoption timing (RQ2).

5.2.1.2 Fear of Financial Impact

This study identified the fear of immediate financial impact as a barrier to the adoption of SSCM practices. This aligns with existing literature which consistently highlights financial concerns as a significant factor delaying the integration of sustainability into supply chains (Jabbarzadeh, Fahimnia & Sabouhi, 2018). Small suppliers, in particular, face challenges related to the upfront costs of sustainability certifications, which can act as a substantial barrier to adoption, even in regions where sustainability practices are relatively well-established. As Kumar and Sharma (2021) note, firms often hesitate to adopt sustainable practices when faced with immediate financial burdens, fearing that the costs outweigh the potential long-term benefits.

In this study, financial barriers were particularly pronounced for smaller businesses, which struggle to meet the costs associated with certifications and audits required for SSCM compliance. These costs are compounded by the need to continuously monitor and audit suppliers to ensure adherence to sustainability standards, an ongoing process that demands significant resources. These findings reflect the concerns raised by Jabbarzadeh et al. (2018), who argue that the upfront costs of sustainable practices, such as sourcing sustainable materials or adopting sustainable packaging, pose substantial challenges for firms with limited financial resources.

Furthermore, the study reveals that evolving regulations and frequent policy changes introduce additional financial uncertainty. Organisations must not only invest in sustainable practices but also allocate resources to remain compliant with shifting regulations. Wagner et al. (2020) also emphasize that regulatory uncertainty can act as a significant barrier, as firms are hesitant to invest in sustainability when they are unsure of future regulations or the potential for policy shifts.

In addition to financial concerns, the study found that past supply chain disruptions also influence decision-making regarding the timing of SSCM adoption. Companies with a history of disruptions—whether due to natural disasters, geopolitical events, or supply chain failures—are particularly sensitive to the financial risks associated with adopting new practices. As Kumar and Sharma (2021) suggest, such organisations are often focused on mitigating risks and safeguarding against operational disruptions, which makes them more cautious about adopting practices perceived as financially burdensome.

The financial implications of adopting SSCM are also evident in the costs of sustainable packaging materials and the financial resources required to adjust pricing models to accommodate sustainable products. This highlights the importance of ensuring that financial resources are available to support the transition to sustainable practices, an area that has been insufficiently addressed in the literature until now.

The findings contribute to RQ1 by illustrating those financial concerns, particularly the immediate costs of certification, auditing, and compliance, are significant underlying reasons for the delay in adopting sustainable practices within supply chains. RQ2 is addressed by showing that the fear of financial impact influences the timing of SSCM adoption, as organisations delay implementation until financial conditions or external resources, such as subsidies or incentives, become more favourable.

5.2.1.3 Lack of Awareness or Knowledge

A key barrier to the adoption of SSCM practices identified in the study is a lack of awareness and knowledge within organisations. This finding is consistent with existing literature that highlights knowledge gaps as a significant impediment to sustainability initiatives (Sharma et al., 2022; Roy, Silvestre, & Singh, 2020). Employees often struggle to engage with sustainability practices due to limited understanding of their relevance to their roles or the broader organisational goals. In many cases, sustainability is seen as peripheral rather than integral to daily operations. This results in a lack of proactive participation in sustainability efforts, delaying adoption.

One novel insight from this study is the difficulty organisations face in raising awareness about key sustainability certifications, such as ISO 14001, within the workforce. While these certifications are recognised as valuable tools for formalising sustainability efforts, participants in the study reported challenges in capturing employee attention and demonstrating the value of such certifications. This highlights a gap in internal communication strategies, as Lozano (2020) and Stutz, Schell, and Hack (2022) suggest that successful implementation of sustainability initiatives requires not only top-down leadership commitment but also clear, consistent communication to engage employees. This is particularly relevant when organisations seek to introduce formal frameworks like certifications, which often require buy-in from all levels of staff.

The findings also emphasise that many firms struggle to translate sustainability knowledge into actionable practices. In line with Geissdoerfer et al. (2017) and Pigosso and McAloone (2017), the study points to a widespread lack of understanding about how to identify and integrate sustainable alternatives into supply chain operations. This is particularly evident in areas such as sustainable

packaging, where firms face difficulty balancing environmental impact with functional performance and customer satisfaction. The challenge is not only about identifying suitable alternatives but also ensuring that these alternatives align with customer expectations and market demands, as noted by Sarkis and Zhu (2018).

The novelty of the study's findings lies in its emphasis on the gap between awareness and implementation. While previous research has highlighted the importance of knowledge for sustainability adoption, this study provides a more granular view, showing how the lack of awareness is not just about sustainability concepts but also about specific tools, such as certifications, that could facilitate the process. It also reveals that many organisations perceive sustainability initiatives as complex or disconnected from their immediate operational concerns, which further delays their integration. This insight extends the literature by illustrating how a lack of practical knowledge about implementing sustainability measures within specific contexts, such as certification processes or sustainable material sourcing, can create significant barriers to timely adoption.

For RQ1, the study identifies a clear link between knowledge gaps and delays in adoption. A lack of understanding of sustainability practices, their benefits, and the practical step for implementation contributes to inertia within organisations. For RQ2, the study suggests that the timing of adoption is influenced by the extent to which organisations are equipped with the necessary knowledge to implement sustainability initiatives effectively. Organisations that lack awareness or knowledge may delay adoption until they have the resources or expertise to do so properly.

5.2.1.4 Inflexible organisational Structure

The study highlights how rigid organisational structures and hierarchical decision-making processes create significant barriers to the timely adoption of sustainable supply chain management (SSCM) practices. This finding aligns with existing research (Hoffman, 2000; McKinsey & Company, 2020), which suggests that organisations with traditional, top-down decision-making processes tend to experience delays in implementing sustainability initiatives. Hierarchical structures slow down the flow of information and create bottlenecks in decision-making, preventing the quick integration of sustainable practices across functions.

A key insight from the findings is that firms often struggle with managing the competing interests of multiple stakeholders, which further delays the adoption of SSCM practices. This was evident in the study, where firms expressed concerns about balancing sustainability goals with the interests of customers, suppliers, and other external stakeholders. The complexity of aligning these interests,

combined with internal organisational silos, highlights how rigid structures can impede the timely adoption of sustainable practices.

This research contributes to RQ1 by demonstrating that inflexible organisational hierarchies are a major reason for delays in adopting SSCM practices. The slow and siloed decision-making process limits the integration of sustainability initiatives, with sustainability often viewed as the responsibility of a single department rather than a cross-functional priority. In RQ2, the study suggests that the timing of adoption is significantly influenced by an organisation's internal structure—companies with more agile, flat hierarchies tend to adopt SSCM practices more quickly because they can respond more effectively to external pressures and changes in the regulatory environment (Kolk & Pinkse, 2008).

A novel insight from this study is the recognition that sustainability adoption must sometimes be approached on an industry-wide level to ensure competitiveness. While individual firms can drive innovation, they may struggle to maintain a competitive advantage without broader industry alignment. This is especially true when external pressures—such as regulatory requirements or industry standards—are involved. The study suggests that industry-wide collaboration is crucial for accelerating sustainability adoption. Firms that engage in collective action, share best practices, and align on common sustainability standards are better positioned to overcome barriers and remain competitive (Pagell & Wu, 2009; Carter & Rogers, 2008).

This research underscores the need for both organisational and industry-wide changes to effectively implement SSCM practices. While internal organisational flexibility is essential, firms must also work together within their industries to set common sustainability standards. This dual approach can help firms reduce costs, increase efficiency, and ensure long-term competitiveness in a rapidly changing market.

5.2.1.5 Summary and Implications

This study identifies key organisational barriers that hinder the adoption of SSCM practices, including cultural resistance, financial concerns, lack of awareness or knowledge, and inflexible organisational structures. These barriers significantly delay the integration of sustainability into supply chains

The findings of this study highlight significant organisational barriers to adopting sustainable supply chain management (SSCM) practices, revealing the need for both internal and industry-wide changes to accelerate sustainability adoption. Cultural resistance, rooted in employees' concerns about disruption to established routines and additional workload, can be overcome by cultivating a

sustainability-oriented organisational culture, with leadership engaging employees at all levels to reframe sustainability as a core business priority. Financial barriers, particularly the upfront costs of certifications and sustainable practices, can be addressed through financial incentives or subsidies, alongside clear communication of the long-term benefits of sustainability. Bridging the knowledge gap through training and industry-wide awareness campaigns will ensure that organisations better understand how to integrate sustainability into their operations and comply with regulations. Inflexible organisational structures, often characterised by siloed decision-making, must be replaced with more agile, cross-functional teams that enable faster adoption of sustainable practices. Finally, industry-wide collaboration is crucial to overcoming collective barriers; by working together, firms can standardise sustainability practices, share knowledge, and create a level playing field. Overall, addressing these organisational barriers requires a multifaceted approach that integrates cultural change, financial support, education, structural flexibility, and collective industry action. Firms that adopt these strategies will be better positioned to overcome delays in SSCM adoption, ensuring competitiveness and driving sector-wide transformation towards sustainability.

5.2.2 Theme 2: Supplier Collaboration

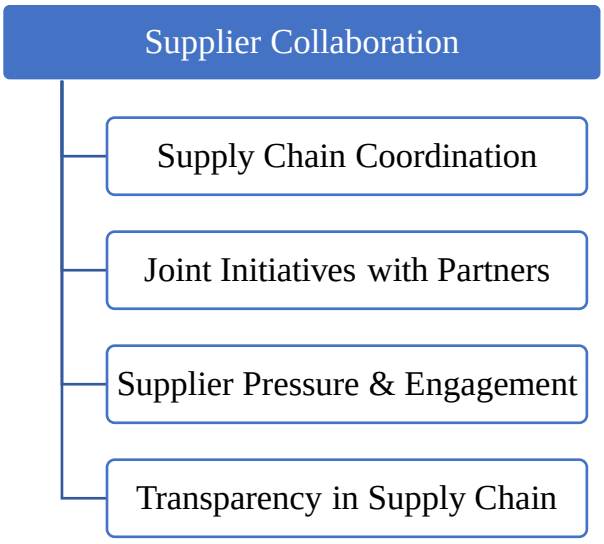
Supplier collaboration emerges as a critical enabler of SSCM, – Strong Supplier Relationships and Partnerships Drive Adoption Timing While firms face significant challenges aligning their sustainability goals with suppliers' capabilities, successful collaboration is key to breaking delays in SSCM adoption.

Subthemes

- **Supply Chain Coordination**: How firms work with suppliers to adopt sustainable practices along the value chain.
- **Joint Initiatives with Partners**: Collaboration between firms and stakeholders (suppliers, customers, industry associations) to promote sustainability.
- **Supplier Pressure and Engagement**: The influence of suppliers pushing for or resisting sustainability efforts.
- **Transparency in Supply Chain**: Efforts to ensure transparency in the sourcing of materials and ethical practices across the supply chain.

Link to RQ1 & RQ2: This theme is critical in understanding how external relationships, particularly with suppliers, affect the adoption of sustainable practices. It will be discussed in terms of the factors influencing the timing of adoption (RQ2) and the external barriers or drivers (RQ1) related to supplier collaboration and pressure.

Figure 13: Theme 2: Supplier Collaboration



5.2.2.1 Supply Chain Coordination

Effective supply chain coordination is critical for adopting sustainable practices, but firms often face significant challenges. Interdepartmental coordination is one of the key barriers identified in this study, where many employees, even at managerial levels, lack knowledge about the sustainable practices within their firm and supply chain. This lack of communication and alignment between departments hinders the implementation of sustainability initiatives across the business, supporting RQ1 on the reasons for delays in adopting sustainable practices. As Linnenluecke et al. (2017) and Hahn et al. (2015) highlight, cross-functional collaboration is essential, yet organisational silos impede this, restricting knowledge-sharing and the integration of sustainability practices.

Additionally, supplier coordination is a significant factor in delaying sustainability adoption, as firms struggle to find suppliers who meet sustainability criteria. As Pagell, Wu, and Wasserman (2010) and Lu et al. (2018) note, the challenge of finding capable and committed suppliers causes delays, thus answering RQ2 regarding the timing of adoption. Economic concerns, such as the cost of switching to sustainable materials like cardboard packaging, also impede supplier engagement, as suppliers may lack the financial resources to transition. This highlights financial constraints as a delay factor for adoption (RQ1), particularly for small suppliers unable to afford certifications or new technologies (Jabbarzadeh et al., 2018).

Regulatory pressures further complicate the adoption process. As Shabbir and Wisdom (2020) point out, the complexity and variability of regulations across regions create uncertainty, delaying decisions about sustainability investments until firms have clearer regulatory guidelines. This links to RQ2, showing how evolving regulations influence the timing of adoption.

The study also emphasizes that supplier relationships and requirements are crucial for achieving sustainability goals. Firms that engage suppliers based on their sustainability performance see improved environmental outcomes across the supply chain, aligning with Pagell and Wu (2009). By prioritising suppliers that embrace sustainability, firms can enhance their overall sustainability performance and reputation. Proactive strategies, such as supplier audits and certifications, enable firms to manage sustainability risks and accelerate adoption (RQ2).

In conclusion, both internal coordination and supplier relationships are central to the timely adoption of sustainable practices. Interdepartmental silos, supplier limitations, financial barriers, and regulatory uncertainty contribute to delays (RQ1), but when organisations collaborate effectively within their supply chains, adoption can be accelerated (RQ2). Overcoming these barriers requires fostering internal coordination and engaging suppliers who align with sustainability goals.

5.2.2.2 Joint Initiatives with Partners

The adoption of sustainable practices within supply chains is significantly influenced by joint initiatives and collaboration between firms and their stakeholders, such as suppliers, customers, and industry associations. The study reveals that collaboration with partners plays a pivotal role in promoting sustainability, but it also uncovers barriers that delay its widespread adoption, answering RQ1 on the reasons for delays in adopting sustainable practices. Despite the evident benefits of collaborative efforts, including knowledge-sharing, collective problem-solving, and innovation, firms often face challenges in aligning the interests of various stakeholders. Barriers such as lack of trust, misaligned incentives, and reluctance to share sensitive information impede the potential of such partnerships, which has been documented in previous studies (Linton, Klassen, and Jayaraman, 2007; Walker et al., 2021). This fragmentation complicates the development of industry-wide solutions and hinders efforts to address sustainability issues in a coordinated manner.

Moreover, firms that engage in joint initiatives with industry associations and stakeholders often do so in response to external pressures, such as industry standards, peer pressure, and customer demands. The findings confirm that organisations are driven to adopt sustainable practices in order to comply with industry regulations and customer expectations (Carter & Rogers, 2008; Kumar et al., 2020). This suggests that industry standards and external pressures play a critical role in influencing the timing of sustainability adoption (RQ2). The research also highlights the significant influence of industry associations, such as the Entertainment Retailers Association (ERA), which actively promote responsible business practices, share best practices, and set sustainability goals. These efforts not only provide guidance but also foster a collective industry movement towards sustainability, underscoring

the importance of external support and industry-wide collaboration in accelerating the transition to sustainable supply chains.

Importantly, the study found that firms are increasingly selecting suppliers who prioritise sustainability, viewing them as critical partners in driving sustainability within the supply chain. This finding aligns with the literature, which stresses the importance of supplier collaboration and engagement in achieving sustainability objectives (Pagell & Wu, 2009). Organisations are adopting various strategies such as supplier audits, sustainability certifications, and supply chain mapping to assess and ensure that their suppliers meet sustainability standards. These initiatives reflect a growing trend of proactive supply chain management where sustainability criteria are used to select and monitor suppliers, thus enhancing sustainability performance throughout the value chain. This addresses RQ2 by showing how organisational efforts to involve suppliers in joint sustainability initiatives directly influence the timing and success of sustainable practice adoption.

However, regulatory compliance is another key factor influencing the speed and effectiveness of joint initiatives. The complex regulatory landscape, coupled with frequent policy changes, creates uncertainty that slows down the adoption of sustainable practices.The study reveals that organisations often hesitate to act until clear regulatory guidelines are established, which directly links to RQ2 regarding the factors influencing the timing of adoption. Additionally, the financial burden associated with obtaining sustainability certifications, particularly for smaller suppliers, is another key barrier that slows the adoption of joint initiatives. These findings highlight the need for financial support and capacity-building for smaller firms, particularly in developing economies, to foster a more inclusive approach to sustainable supply chain management.

While external pressures and industry standards are pivotal, internal organisational culture also plays a significant role. The findings underscore that firms are more likely to collaborate with partners if there is internal alignment and commitment to sustainability. A lack of internal coordination can prevent firms from effectively working with stakeholders to adopt sustainable practices, further delaying the transition to sustainable supply chains, as highlighted in the works of Linnenluecke et al. (2017) and Hahn et al. (2015).

In conclusion, joint initiatives with partners—including suppliers, customers, and industry associations—are essential for driving sustainability within supply chains. However, the success and timing of these initiatives depend on overcoming barriers such as lack of trust, misaligned incentives, and financial constraints, while also responding to external pressures like industry standards and

regulatory requirements. By fostering collaboration, sharing best practices, and aligning objectives, firms can expedite the adoption of sustainable practices and enhance their competitiveness in the marketplace.

5.2.2.3 Supplier Pressure and Engagement

The relationship between firms and their suppliers plays a crucial role in the adoption of sustainable practices within supply chains. The study highlights the challenges firms face when trying to engage suppliers in sustainability efforts, shedding light on the external pressures and supplier resistance that delay adoption, thereby answering RQ1 regarding the reasons behind delays in adopting sustainable practices. A major challenge identified is the difficulty firms face in identifying suppliers who meet sustainability requirements and possess the necessary capabilities to implement sustainable practices. This aligns with prior research, which shows that organisations often struggle to find suppliers who align with their sustainability goals (Pagell, Wu, and Wasserman, 2010; Lu et al., 2018).

Economic concerns emerge as a significant barrier, with many suppliers resisting the shift to more sustainable practices due to higher costs. For instance, reluctance to switch from plastic to cardboard packaging reflects the economic challenges suppliers face when adopting alternative materials. This highlights the tension between economic viability and sustainability goals, which delays the implementation of sustainable practices and ties into RQ2, exploring factors that influence the timing of adoption.

Regulatory and policy constraints also delay sustainability adoption. The complex web of regulations across different jurisdictions presents challenges, particularly for smaller suppliers who struggle with the financial burden of certification and compliance costs. This reinforces RQ1, where the financial costs associated with certification and ongoing compliance are significant obstacles, especially for smaller firms. Additionally, monitoring and auditing suppliers requires substantial resources, further hindering progress toward sustainability goals.

Another major barrier identified is limited collaboration among supply chain partners. Lack of trust, misaligned interests, and reluctance to share sensitive information prevent firms and suppliers from working together effectively (Linton, Klassen & Jayaraman, 2007; Walker et al., 2021). Without collaboration, it becomes difficult to identify risks, share best practices, and drive collective sustainability efforts. This lack of cooperation significantly delays the adoption of sustainable practices.

A novel finding of this study is the impact of supplier proximity on sustainability outcomes. We found that sustainability violations, such as child labour, were more likely in distant supply chain tiers, corroborating previous research (Locke, Amengual & Mangla, 2009; Gualandris et al., 2015). These findings highlight the need for more responsible sourcing practices and closer monitoring of distant suppliers to ensure compliance with sustainability standards.

The study also reveals the complexity of managing stakeholder interests, particularly when dealing with retailers resistant to adopting sustainable packaging due to concerns over demand forecasting and inventory management. These operational challenges emphasise the need for inclusive decision-making and the use of technological tools to optimise supply chain processes.

In summary, supplier engagement plays a pivotal role in the timing and effectiveness of adopting sustainable supply chain practices. Barriers such as economic concerns, regulatory complexity, and limited collaboration delay the transition to sustainability. To overcome these challenges, firms must foster closer cooperation with suppliers, address financial constraints, and leverage technology to enhance supply chain transparency and decision-making.

5.2.2.4 Transparency in Supply Chain

This study highlights that achieving transparency in supply chains and ensuring ethical practices requires strong collaboration, clear communication, and aligned goals across the supply chain. These findings support RQ2, underscoring that collaboration and shared strategies are crucial in the timely adoption of sustainable supply chain practices.

A key challenge identified is reporting complexity. Larger retailers like Tesco benefit from advanced data systems, while smaller firms, such as Asda, struggle due to limited resources. These disparities make comprehensive sustainability reporting difficult, especially for smaller companies. This finding aligns with literature (Pagell & Wu, 2009; Beske & Seuring, 2014), which highlights the importance of investing in technology and data systems to enhance reporting accuracy and transparency.

The study also identifies challenges with certification processes. Obtaining certifications like ISO 14001 requires significant time and resources, which can overwhelm smaller businesses. This mirrors recent research emphasising the need for effective internal communication and employee engagement to support certification processes (Lozano, 2020; Stutz, Schell & Hack, 2022). Organisations must implement communication strategies to ensure all staff understand the value of certifications and sustainability goals.

Technology plays a crucial role in ensuring transparency, with advancements like blockchain and digital traceability systems enabling firms to verify the sustainability of raw materials (Karamchandani et al., 2021). These technologies enhance supply chain visibility, helping firms meet sustainability standards and the growing demand for ethically sourced products.

Supply chain complexity also affects transparency. Expanding into new markets makes it more difficult to maintain transparency and meet sustainability goals, especially when demand forecasting and supply chain operations are challenging (Closs, Speier & Meacham, 2011). This finding aligns with literature on the complexities of managing global supply chains (Hashemi, Karimi & Tavana, 2015), highlighting the added difficulties of ensuring ethical sourcing and transparency across diverse operations.

The study also highlights the impact of supplier proximity on sustainability violations, such as child labour, particularly in distant tiers of the supply chain. This supports previous research (Locke, Amengual & Mangla, 2009; Gualandris et al., 2015), emphasising the need for responsible sourcing practices and closer collaboration with remote suppliers to ensure transparency and ethical practices.

Managing stakeholder interests is another significant factor, particularly when changes, such as sustainable packaging, are involved. Retailer resistance due to concerns over demand forecasting and inventory management illustrates the importance of inclusive decision-making. The findings align with literature that stresses the need for technological tools to optimise supply chain processes and improve coordination (Kumar & Sharma, 2021).

Finally, the role of industry standards and certifications is reinforced. Industry certifications such as ISO 14001 provide a framework for organisations to demonstrate their sustainability commitment and facilitate transparency across the supply chain. This supports previous research on the positive impact of certifications on sustainability adoption and the promotion of industry-wide best practices (Dangelico, Fraccascia & Nastasi, 2020; Kelling et al., 2021).

In summary, improving supply chain transparency requires overcoming barriers like reporting complexity, certification processes, and supply chain fragmentation. However, through technology, stronger supplier collaboration, and adherence to industry standards, organisations can foster greater transparency, mitigate risks, and accelerate the adoption of sustainable practices.

5.2.2.5 Summary and Implications

Supplier collaboration is a pivotal driver of sustainable supply chain management (SSCM), influencing both the timing and success of adopting sustainable practices. The study reveals that effective coordination within supply chains—both internally and with suppliers—is essential for overcoming delays in sustainability adoption. However, several barriers exist, including interdepartmental silos, supplier capability constraints, and financial challenges, which hinder progress. Regulatory uncertainty and evolving standards further complicate this process. Joint initiatives with partners, including suppliers, customers, and industry associations, have shown to be effective in promoting sustainability, but issues such as misaligned incentives and trust barriers often slow the pace of adoption. Supplier engagement is particularly critical, as firms must navigate the resistance or financial limitations of suppliers to meet sustainability goals.

The findings underscore that strong supplier relationships and coordinate efforts across the value chain are crucial to accelerating the adoption of sustainable practices. To address the delays highlighted in the study, organisations must foster internal collaboration, invest in technology for better coordination, and engage suppliers through audits, certifications, and proactive partnerships. Regulatory support and clearer guidelines are needed to mitigate uncertainties and financial barriers that prevent smaller suppliers from adopting sustainable practices. By aligning stakeholders' interests and building trust, firms can overcome barriers to joint sustainability initiatives. Ultimately, fostering collaboration, transparency, and joint efforts across the supply chain not only drives sustainability but also strengthens the competitive edge of firms in an increasingly eco-conscious market.

5.2.3 Theme 3: Advocacy and Industry Standards

Industry regulations and standards play a significant role in shaping the timing and pace of adopting sustainable practices within supply chains. Local, regional, and global regulatory pressures, coupled with industry-specific standards and external advocacy, create both opportunities and challenges for firms striving to meet sustainability goals. This theme explores how regulatory frameworks, industry certifications, stakeholder influence, and public policy incentives collectively impact the speed and effectiveness of sustainability adoption.

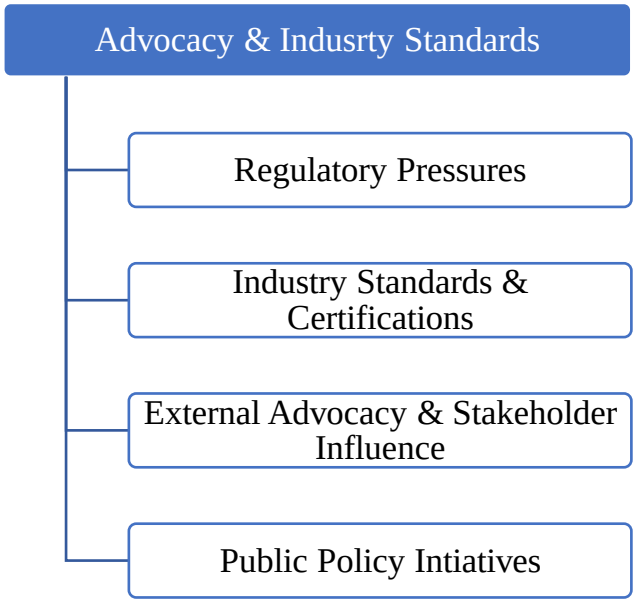
Sub-themes

- **Regulatory Pressure**: How local, regional, and global regulations create urgency or delays for firms.
- **Industry Standards and Certifications**: The adoption of standards like ISO, LEED, etc., and how they affect the pace of adoption.

- **External Advocacy and Stakeholder Influence**: How pressure from NGOs, customers, and stakeholders accelerates or impedes sustainability efforts.
- **Public Policy and Incentives**: The role of government policies, incentives, or subsidies in influencing sustainability decisions or deploying necessary technologies for sustainable operations.

Link to RQ1 & RQ2: This theme addresses the role of external forces such as regulations, standards, and public policy. It will be analysed in relation to how these external pressures can either drive or delay the adoption of sustainable practices (RQ1), as well as the timing of these adoptions (RQ2).

Figure 14: Theme 3: Advocacy and Industry Standards



5.2.3.1 Regulatory Pressure

Regulatory and policy constraints play a critical role in shaping the timing of sustainability adoption within supply chains, often creating both urgency and delays. Organisations must comply with a complex array of regulations governing environmental protection, labour standards, and corporate social responsibility. Recent studies, such as those by Shabbir and Wisdom (2020) and Müller et al. (2023), highlight that these regulations are often jurisdiction-specific, making compliance challenging, especially for firms operating in multiple regions. The study finds that small suppliers are disproportionately affected by these regulations, as they face significant financial barriers when seeking sustainability certifications. In line with Jabbarzadeh et al. (2023), who argue that certification costs remain a key impediment for SMEs, this study underscores the need for targeted financial support to help smaller firms navigate regulatory hurdles. This finding ties directly to RQ1 (What are the

underlying reasons for firms' delay in adopting sustainable practices within their supply chain?), illustrating that small firms' limited resources for certification and compliance hinder timely adoption of sustainability practices.

Furthermore, the evolving nature of regulations and the frequent changes in policy contribute to uncertainty, delaying the adoption of sustainable practices. Porter and van der Linde (2022) suggest that regulatory ambiguity can lead firms to postpone investment in sustainable technologies until clearer frameworks are established. The findings support this view, indicating that companies often delay sustainability efforts until regulations stabilise, as seen in industries where regulatory landscapes are still being shaped. This directly answers RQ2 (What factors influence the timing of the adoption of sustainable supply chain practices?), showing that regulatory uncertainty significantly affects the pace at which firms adopt sustainability practices. Additionally, the need for continuous monitoring and auditing of suppliers is a considerable burden, especially when firms struggle with resource limitations. The study confirms the findings of Lee et al. (2021), who note that a lack of dedicated resources for auditing complicates efforts to ensure supply chain sustainability, further delaying adoption.

Interestingly, the study also highlights two distinct approaches firms can take towards sustainability requirements: a reactive approach, driven by compliance with regulatory requirements, and a proactive approach, where firms integrate sustainability into their core strategies even beyond what is required by law. Badurdeen et al. (2009) and more recently Stark et al. (2022) argue that companies adopting a proactive approach tend to achieve long-term competitive advantages, a viewpoint confirmed in the study through Case Study B. This company's shift from a reactive approach (focusing on meeting certification standards) to a more proactive one, spurred by a human rights investigation concerning child labour, is a significant example of how proactive engagement can accelerate sustainability adoption and align with broader corporate goals. This shift not only addressed regulatory pressures but also mitigated reputational risks, which underscores the importance of proactive sustainability strategies in overcoming delays (RQ2). By prioritising supplier sustainability and working collaboratively with regulatory bodies, firms can anticipate regulations and better navigate the complexities of supply chain compliance, moving from mere compliance to a more integrated, competitive approach. Pagell and Wu (2009) further support this by highlighting that organisations which proactively select suppliers based on sustainability criteria can improve both environmental and social outcomes throughout their supply chains.

In conclusion, regulatory pressures—combined with financial constraints, shifting policy landscapes, and the necessity of supplier collaboration—create significant delays in the adoption of sustainable practices within supply chains. Firms that remain reactive face slower adoption times due to the unpredictability of regulatory frameworks, while those that adopt a proactive approach can better position themselves to meet both regulatory expectations and stakeholder demands, gaining a competitive edge in the process. The findings highlight the importance of regulatory clarity, financial support for SMEs, and the role of proactive supplier engagement in facilitating timely and effective sustainability adoption.

5.2.3.2 Industry Standards & Certifications

Industry standards and certifications, such as ISO 14001 and LEED, are crucial drivers of sustainable supply chain practices. These certifications provide a structured framework for sustainability and signal compliance to stakeholders, including customers, regulators, and investors. However, the findings reveal that while these standards are often seen as a catalyst for sustainability, they also present significant challenges, particularly in terms of cost and complexity.

The research contributes to understanding the delays in adoption (RQ1) and timing of adoption (RQ2) by showing how certification requirements can both drive and hinder the pace of sustainable practices. Consistent with previous studies (e.g., Wiengarten, Pagell, & Fynes, 2013; Sartor et al., 2019), the findings confirm that certifications encourage sustainability, but we also identify barriers that slow adoption, particularly for smaller suppliers. These firms face high costs and complex compliance processes, especially in regions where sustainability practices are not yet fully institutionalised. This is a novel insight, expanding on Oelze et al. (2020), who identified similar challenges but did not focus on SMEs in emerging markets.

Moreover, while many studies (e.g., Badurdeen et al., 2009) emphasise the proactive adoption of sustainability practices, The research suggests that reactive adoption remains prevalent, particularly in firms pursuing certification to meet basic compliance rather than to drive innovation. This finding challenges assumptions in the literature that sustainability certifications always lead to proactive strategies (Badurdeen et al., 2009). In Case Study A, firms mainly adopted sustainability measures to meet regulatory and certification requirements, indicating a reactive approach. By contrast, Case Study B illustrates a shift to proactive strategies in response to a public crisis, like a human rights investigation, aligning with Walker et al. (2021), who argue that external pressure can push firms to adopt more ambitious sustainability strategies.

Additionally, industry associations play a significant role in driving sustainability. Findings echo the work of Dangelico et al. (2020) and Kelling et al. (2021), who highlight the importance of industry groups in setting common sustainability goals and providing resources for compliance. These associations, however, must tailor their efforts to support smaller firms, whose lack of resources can delay certification and adoption.

Our study also underscores the growing role of technology in enhancing compliance with sustainability standards. Technologies like blockchain and traceability systems are increasingly used to verify the sustainability of raw materials and ensure transparent sourcing, as highlighted by Karamchandani et al. (2021). These innovations help reduce barriers to certification by making compliance more efficient and traceable.

This research provides new insights into the delays in adoption (RQ1) and the timing of adoption (RQ2) of sustainable supply chain practices, showing that while industry standards and certifications drive sustainability, they also create significant barriers, particularly for smaller firms. The study highlights the importance of financial support, technology, and industry associations in accelerating adoption and overcoming these challenges.The findings challenge existing literature by emphasising the reactive nature of many firms' sustainability efforts and the need for more proactive strategies.

5.2.3.3 External Advocacy & Influence

External pressures from NGOs, customers, and industry peers are key drivers of sustainability efforts in supply chains. The findings from this study highlight that customer demands for more ethical and transparent practices, alongside NGO advocacy, can accelerate the adoption of sustainable practices by compelling firms to meet environmental, social, and governance (ESG) expectations. This aligns with research by Carter and Rogers (2008) and Pagell & Wu (2009), which suggest that external stakeholder pressure creates a sense of accountability that drives firms to adopt sustainability in line with public and consumer expectations. Moreover, peer pressure within industries often leads organisations to align with prevailing sustainability norms to maintain competitiveness and legitimacy.

However, the study also identifies that such external pressures can sometimes impede sustainability efforts, particularly when firms face economic concerns, regulatory uncertainty, or misaligned interests with suppliers. For example, firms may hesitate to adopt new sustainable packaging or sourcing practices due to concerns about cost implications or marketability. This is evident in industries where standardised packaging is prevalent, and deviations from the norm may be seen as a

competitive disadvantage. Such concerns reflect the findings of Walker et al. (2021), who argue that peer pressure can delay innovation in supply chains.

Furthermore, the research highlights that stakeholder collaboration—particularly between suppliers, customers, and regulators—is essential for overcoming barriers to sustainability. The challenge of aligning interests and sharing information across the supply chain often leads to delays in adopting sustainable practices. For instance, suppliers may lack the resources or capabilities to meet sustainability criteria, which becomes a bottleneck for firms looking to integrate sustainability throughout their supply chains. This finding reinforces RQ1, explaining that firms delay adopting sustainable practices due to difficulties in aligning their objectives with those of their suppliers or navigating complex supply chain relationships.

In sum, while external advocacy from NGOs, customers, and industry peers plays a significant role in driving the adoption of sustainable practices, it can also create barriers when firms face economic constraints, market risks, or collaboration challenges. The novelty of this study lies in its insight that peer pressure and misaligned stakeholder interests can not only accelerate but also delay sustainability adoption, adding complexity to the relationship between external pressures and sustainability decisions. By fostering trust and enhancing collaborative frameworks, firms can better navigate these external influences and accelerate the transition to more sustainable supply chains.

5.2.3.4 Public Policy Initiatives

Public policy and government incentives are critical drivers of sustainability adoption within supply chains, as firms often rely on these mechanisms to navigate the complexities of sustainable practices. The findings reveals that regulatory frameworks and financial incentives have a dual role in both accelerating and delaying sustainability efforts, depending on how they are structured and the capacity of firms to adapt.

The findings emphasise the financial burden faced by smaller suppliers in complying with sustainability requirements, particularly when it comes to obtaining certifications. Even in regions with well-established sustainability practices, the costs associated with certification, such as for ISO 14001 or LEED, create significant barriers for small businesses. This aligns with RQ1, explaining that financial constraints and the costs of compliance are key reasons for delays in adopting sustainable practices, especially among smaller firms. Such barriers highlight the need for targeted governmental support and financial incentives to alleviate these costs, ensuring that SMEs can meet the increasingly stringent sustainability requirements without jeopardising their financial viability. This finding

supports previous research by Shabbir and Wisdom (2020), who identified the financial strain as a critical factor hindering the adoption of sustainability initiatives in less-resourced firms.

Moreover, evolving and frequently changing regulations can introduce uncertainty, complicating firms' decision-making and delaying the adoption of sustainable practices. Organisations must continuously monitor shifting regulations across multiple jurisdictions, which can be resource-intensive and disruptive. This regulatory uncertainty is highlighted as a key barrier to adopting sustainable practices, particularly in industries with complex, multi-tiered supply chains. This finding challenges the assumption that regulatory frameworks alone can drive sustainability adoption, suggesting instead that their instability can create hesitation among firms, particularly when compliance requires significant investment in technology or process changes.

The study also distinguishes between two approaches to meeting sustainability standards: reactive and proactive. The reactive approach involves firms adopting sustainability practices solely to meet compliance requirements, typically triggered by regulatory pressure or customer demand. This is exemplified in Case Study A, where the firm's sustainability efforts were driven primarily by the need to meet certification criteria. However, the findings also highlight the advantages of a proactive approach, where firms go beyond mere compliance to drive innovation, foster stakeholder engagement, and integrate sustainability into their core business strategies. Case Study B illustrated this shift when the company transitioned from a reactive response to a proactive stance after facing a human rights investigation linked to child labour. This proactive shift allowed the firm to gain a competitive advantage, supporting the argument by Badurdeen et al. (2009) that progressive firms who adopt proactive strategies are better positioned to lead the market and mitigate risks.

This proactive approach aligns with RQ2, as it demonstrates how timing and the approach to sustainability adoption significantly influence the effectiveness and impact of these efforts. Firms that take a proactive stance tend to embed sustainability into their operations earlier, allowing them to align with customer expectations, industry standards, and emerging governmental incentives more effectively. Furthermore, proactive companies are better equipped to leverage tax incentives, subsidies, and grants, which can provide the necessary resources to deploy sustainable technologies and processes faster.

In conclusion, the findings underscore the critical role of government policies, incentives, and regulations in shaping the pace of sustainability adoption. While these factors can provide

significant impetus for firms to comply with sustainability standards, their complexity, uncertainty, and cost implications may delay progress, particularly for smaller firms. The study highlights that firms adopting a proactive approach to sustainability are more likely to realise competitive advantages and navigate these external challenges effectively. The novelty of this research lies in its emphasis on the dynamic relationship between reactive and proactive strategies, offering new insights into how firms can strategically align their sustainability efforts with policy incentives to enhance long-term performance.

5.2.3.5 Summary and Implications

The findings of this study underscore the significant influence of regulatory pressures, industry standards, and external advocacy on the adoption of sustainable practices within supply chains. Regulatory frameworks, industry certifications, and public policy incentives create a complex environment that both accelerates and delays sustainability efforts. On one hand, regulations and industry standards like ISO and LEED can compel firms to adopt sustainable practices to ensure compliance, particularly when these standards are aligned with customer expectations or competitive pressures. However, the study also highlights that the complexity and costs associated with meeting these standards can impede the timely adoption of sustainability practices, particularly for SMEs. The financial barriers to certification and the need for continuous monitoring of evolving regulations further complicate firms' ability to implement sustainability initiatives swiftly. These findings align with RQ1, identifying financial constraints and regulatory uncertainty as key reasons for delays in sustainability adoption, particularly among smaller firms.

The research also highlights the dual nature of external pressures, which can both accelerate and slow down sustainability adoption. While NGO advocacy, customer demands, and industry peer pressure can prompt firms to adopt more ambitious sustainability practices, the costs of implementing these changes and the need for strategic alignment across supply chains can create barriers. The study shows that firms often take a reactive approach, adopting sustainability practices primarily to meet certification or regulatory requirements. However, proactive firms that integrate sustainability into their core strategies can gain a competitive edge and mitigate risks, as seen in Case Study B, where a shift to proactive sustainability measures led to enhanced business outcomes. This finding challenges the prevailing assumption that sustainability adoption is always a result of regulatory pressure, suggesting that firms must proactively engage with stakeholders and anticipate regulations to accelerate the adoption of sustainable practices. Ultimately, the research suggests that governments, industry associations, and NGOs must collaborate to provide clearer guidance, financial support, and

incentivisation for SMEs to overcome the barriers to certification and adoption, enabling faster and more widespread sustainability integration across supply chains. This directly ties to RQ2, illustrating how the timing of sustainability adoption is influenced by both external pressures and the firm's internal strategic response.

5.2.4 Theme 4: Organisational Initiatives and Innovation

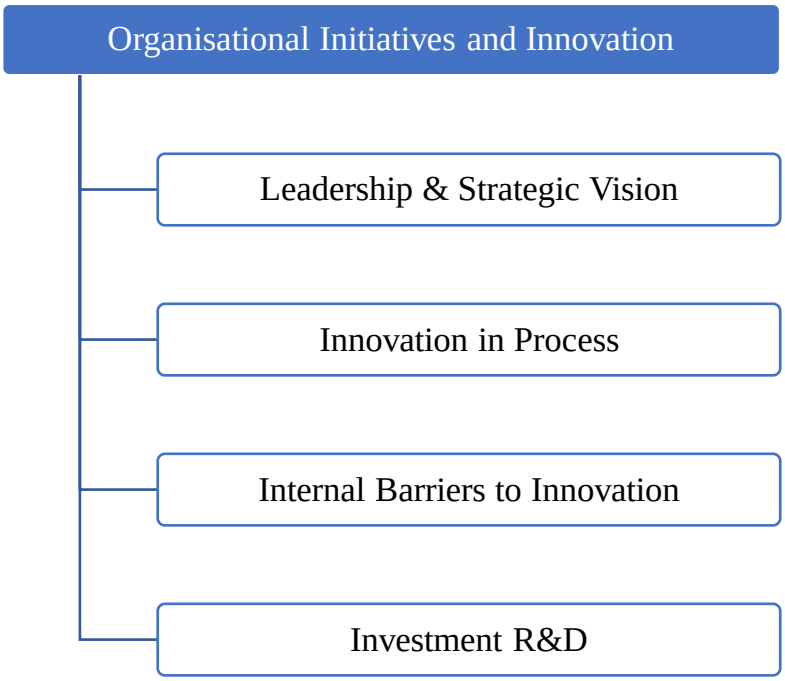
This theme examines how internal factors, including leadership, innovation, and investment in R&D, drive or hinder the adoption of sustainable supply chain practices. It also highlights internal barriers, such as cultural resistance and lack of knowledge, that influence the timing and pace of sustainability adoption.

Sub-Themes:

- **Leadership and Strategic Vision:** The role of top management in prioritising sustainability initiatives.
- **Innovation in Processes:** The development and implementation of new processes, technologies, or systems to enable sustainability.
- **Internal Barriers to Innovation:** Cultural resistance, lack of knowledge, or fear of failure slowing down innovation efforts.
- **Investment in R&D:** Allocating resources to sustainable innovation and research for long-term growth.

Link to RQ1 & RQ2: This theme highlights how internal organizational initiatives, such as leadership and innovation, can both accelerate and hinder the adoption of sustainable practices. It will be analysed in relation to how these internal efforts (and barriers) influence the timing of adoption (RQ2), and the factors that delay adoption (RQ1).

Figure 15: Theme 4: Organisational Initiatives and Innovation



Leadership and Strategic Vision

The findings highlight that strong leadership commitment to sustainability is essential for successfully driving sustainable supply chain management (SSCM). Leaders at all levels must demonstrate genuine dedication to sustainability, moving beyond rhetoric to take concrete actions that align with long-term sustainability goals. By setting the tone from the top, leaders foster a culture of sustainability within the organisation, making it a core organisational value. This leadership commitment plays a pivotal role in determining the pace and effectiveness of SSCM adoption, directly linking to RQ2 (What factors influence the timing of the adoption of sustainable supply chain practices?). In this context, leadership not only defines the strategic vision but also ensures that sustainability initiatives are consistently prioritised across all levels of the firm.

Effective communication is equally critical. Leaders must clearly articulate the importance of sustainability to employees, ensuring that everyone understands the rationale behind sustainable practices and their personal role in achieving sustainability goals. The research aligns with Bansal and Roth (2000), who argue that top management's commitment sets the sustainability agenda and drives cultural change. Similarly, Kollmuss and Agyeman (2002) underscore that when leaders communicate sustainability priorities, employees are more engaged, improving overall buy-in. The findings support this view, revealing that top-down commitment and communication significantly enhance employee engagement, which, in turn, accelerates the adoption of SSCM practices. Furthermore, as Pagell, Wu, and Wasserman (2010) highlight, collaboration across departments plays a key role in driving

sustainability initiatives. The study found that when different departments work together towards common sustainability goals, outcomes are more successful. This interdepartmental collaboration fosters innovation, knowledge-sharing, and a deeper commitment to sustainability, reinforcing the notion that strong leadership and a cohesive, collective effort are essential for overcoming the barriers to SSCM adoption.

5.2.4.1 Innovation in Processes

Innovation in processes, technologies, and systems plays a critical role in enabling firms to meet sustainability objectives in their supply chains. The findings support the notion that organisations prioritising innovation—whether in new technologies or more sustainable processes—are more likely to adopt sustainable practices and achieve positive environmental outcomes. This observation aligns with Porter and Linde's (1995) competitive advantage theory, which asserts that environmental sustainability can drive innovation, thereby positioning firms uniquely in the market. However, while Porter and Linde's framework remains influential, more recent studies challenge the assumption that environmental sustainability automatically leads to innovation. For example, Awaysheh et al. (2021) argue that innovation often takes a backseat to compliance, especially when firms are reactive in their approach to sustainability, as discussed in the context of RQ1 (What are the underlying reasons for firms' delay in adopting sustainable practices within their supply chain?). The study supports this critique by showing that firms that focus primarily on meeting regulatory requirements, rather than proactively seeking out innovations, are often slower in adopting sustainable practices. This finding suggests that regulatory compliance can, at times, limit the scope for truly innovative practices, reinforcing the importance of shifting from a reactive to a proactive sustainability strategy.

Moreover, the importance of collaboration in driving innovation within supply chains is increasingly recognised in recent literature. The findings highlights that engaging with stakeholders such as suppliers, customers, and even competitors accelerates the development of sustainable innovations. This resonates with the work of Dangelico and Pujari (2010), who argue that innovation in sustainability is often co-created through networks of inter-organisational collaborations. The study further reveals that these partnerships lead to the development of new technologies, such as renewable energy solutions or circular economy principles, which not only reduce environmental impact but also improve operational efficiency and cost-effectiveness. However, while collaboration is frequently touted as a key driver of sustainability innovation, it is not without its challenges. Research by Zobel et al. (2021) suggests that collaborative efforts often face significant hurdles, including knowledge asymmetries and misaligned objectives among partners. The findings echo this by revealing that even

when firms have access to external expertise, the full potential of collaborative innovation can be hindered by a lack of alignment or poor communication between stakeholders. This challenges the optimistic view in the literature that collaboration will always lead to accelerated innovation, highlighting the need for stronger coordination mechanisms and trust-building in these partnerships.

Additionally, the study contributes to the understanding of the timing and adoption of sustainable practices (RQ2). We find that firms with a strategic focus on innovation in sustainability are quicker to implement sustainable practices compared to those that adopt a more incremental or compliance-driven approach. This supports the arguments of Pagell and Wu (2009), who emphasise that proactive firms with a long-term view of sustainability tend to experience a faster and more integrated adoption process. The case studies presented in this research also show that companies that invest in R&D and innovation are better able to develop new, more efficient ways of sourcing, manufacturing, and distributing products in line with sustainability goals. For instance, firms that adopted renewable energy or green technologies were able to achieve cost savings, reduce their carbon footprints, and differentiate themselves in competitive markets, in line with the findings of Walker et al. (2021). This shows that innovation is not only about improving environmental performance but also about generating competitive advantages in increasingly sustainability-conscious markets.

Overall, this research confirms the importance of innovation in driving sustainable supply chain practices but also challenges the assumption that innovation is always an automatic result of adopting sustainability practices. It highlights the barriers to innovation, such as resource limitations, misalignment in collaborative partnerships, and the predominance of a reactive approach to compliance. By integrating recent insights from the literature, we reveal that successful innovation requires not just technological investment but also strong leadership, strategic vision, and effective collaboration across the supply chain. This ties directly to both RQ1 and RQ2, demonstrating that firms that delay adoption of sustainable practices often do so because of a lack of investment in innovative solutions, while those that proactively embrace sustainability innovations are more likely to accelerate their adoption processes.

5.2.4.2 Internal Barriers to Innovation

The findings of this study highlight significant internal barriers—cultural resistance, lack of knowledge, and fear of failure—that slow down the adoption of sustainable supply chain practices. These factors are tightly linked to both the reasons for delay in adopting sustainable practices (RQ1) and the timing of adoption (RQ2).

Organisational culture plays a pivotal role in either enabling or obstructing innovation. The study found that firms with deeply ingrained, risk-averse cultures often delay sustainability adoption, even as market demand for such practices grows. This aligns with the work of Tushman and O'Reilly (1996), who argue that organisations with a "culture of stability" are less likely to innovate. Similarly, Dangelico and Pujari (2010) highlight how cultural inertia, driven by traditional operational methods, hinders the adoption of sustainable practices. These findings confirm that cultural resistance is a significant barrier, contributing to delays in sustainable supply chain practices and answering RQ1. Firms with cultures that prioritise short-term stability over long-term sustainability innovation are likely to delay their adoption.

Another key barrier identified was a lack of knowledge and technical expertise regarding sustainability innovations. Organisations often lack the internal capabilities to assess or implement sustainable technologies or practices, which leads them to delay adoption. This is consistent with Lee et al.'s (2021) findings that knowledge gaps slow down the implementation of sustainable supply chain practices. Without a solid understanding of available technologies or an awareness of best practices, firms struggle to make informed decisions about sustainability. Sarkis (2017) also underscores that the absence of necessary knowledge and expertise often leads to firms adopting a "wait-and-see" approach. This finding links directly to RQ2, illustrating that firms with limited internal resources or external support for innovation are more likely to delay the adoption of sustainable practices.

Fear of failure also emerged as a critical internal barrier. Many firms are hesitant to embrace sustainability initiatives due to perceived risks, particularly in terms of financial costs, operational disruptions, and reputational concerns. McMullen and Shepherd (2006) discuss how fear of failure can inhibit innovation, a concept that was confirmed in this study. The fear of investing in green technologies or sustainable supply chains, coupled with concerns over the potential for failure, leads to delay. This psychological barrier contrasts with the economic rationale often assumed in adoption models, challenging the traditional view that firms only delay adoption due to external factors like cost or regulation. The findings suggest that internal, fear-based decision-making also plays a significant role in delaying adoption, contributing to RQ1and highlighting that overcoming fear is essential for accelerating sustainability efforts.

These findings extend existing literature by emphasising that internal barriers are not merely passive obstacles but active forces that influence both the reasons for delay and the timing of sustainability adoption. While prior research, such as Porter and van der Linde (1995), has highlighted the competitive advantages of innovation in sustainability, this study adds depth to The understanding by

focusing on internal factors that prevent innovation from even beginning. Additionally, while much of the literature has concentrated on external barriers (such as market forces or regulatory frameworks), this study underscores the importance of organisational culture, knowledge management, and decision-making in shaping the timing and success of sustainability adoption.

In conclusion, addressing internal barriers such as cultural resistance, knowledge gaps, and fear of failure is crucial for accelerating the adoption of sustainable practices in supply chains. Organisations that actively work to overcome these challenges—by fostering a culture of innovation, investing in sustainability knowledge, and reframing risk perceptions—will likely experience quicker and more successful transitions to sustainable practices, directly answering RQ1 and RQ2.

5.2.4.3 Investment in R&D

The findings of this study underscore the critical role of investment in research and development (R&D) for driving sustainable innovation and ensuring the long-term growth of supply chains. The allocation of resources to R&D not only facilitates the development of innovative sustainable practices but also addresses the underlying reasons for delays in adoption (RQ1) and influences the timing of adoption (RQ2). This section critically examines how firms' investment in sustainable innovation, and the necessary resources to manage such initiatives, directly impact their sustainability journey.

Investing in R&D is a key driver for overcoming barriers to adopting sustainable practices within supply chains. The study found that firms which allocate resources to sustainability-focused R&D tend to adopt practices more swiftly and effectively, compared to those that rely on incremental or reactive measures. This ties directly into RQ2, where the timing of adoption is significantly influenced by the firm's proactive investment in sustainable innovation. Previous literature, such as the work by Vachon and Klassen (2008), emphasises that R&D investments enable firms to develop the necessary technologies and processes for sustainable practices. These technologies, such as green manufacturing processes or eco-friendly materials, not only reduce environmental impact but also help firms differentiate themselves in the marketplace.

However, the findings also revealed that many firms struggle to allocate sufficient resources to R&D, primarily due to budget constraints or competing priorities. This finding aligns with prior research, which suggests that sustainability innovation is often deprioritised in favour of short-term financial goals (Hart and Dowell, 2011). This lack of financial commitment to R&D can lead to delays in adopting sustainable practices, as organisations may not have the necessary technologies or processes to meet evolving sustainability standards. The study reinforces RQ1, identifying a lack of R&D

investment as a key reason for the delay in adoption, particularly in firms where sustainability is viewed as a secondary concern or too costly in the short term.

Moreover, the study highlights the challenge of evolving regulations and frequent policy changes that impact the timing and success of sustainable supply chain practices. The dynamic regulatory landscape forces firms to invest not only in the development of sustainable technologies but also in the continuous monitoring of compliance requirements. This creates a further strain on resources, as firms must remain flexible and responsive to regulatory changes, which can lead to delays or disruptions in their adoption of sustainable practices. The necessity of allocating resources for auditing and monitoring suppliers is another critical component of the sustainability process. Effective sourcing and auditing require dedicated teams and processes to ensure that suppliers adhere to sustainability criteria, thus ensuring that the entire supply chain remains in line with the organisation's sustainability goals. This finding builds on the work of Lee and Klassen (2008), who argue that the complexity of monitoring supply chain sustainability and adapting to regulatory changes is a significant challenge for firms seeking to enhance their sustainability performance.

Investing in R&D for sustainability also requires firms to engage in long-term thinking, moving beyond immediate cost-saving measures to consider the future benefits of sustainable supply chain practices. As Porter and van der Linde (1995) suggest, firms that innovate sustainably can often reduce costs in the long term by increasing efficiency and reducing waste. The study supports this notion, revealing that companies which invest in R&D not only improve their sustainability performance but also enhance their competitive advantage. However, firms that lack the foresight or resources to invest in R&D are likely to face delayed adoption and, in some cases, may find it difficult to compete with firms that have integrated sustainability into their core strategies earlier.

The study's findings also challenge the conventional view that R&D investment in sustainability is solely about innovation in products or processes. Rather, R&D is essential for developing the necessary internal capabilities to manage sustainability throughout the supply chain, particularly in the areas of supplier management, compliance, and transparency. As Ageron et al. (2012) argue, the integration of sustainability into supply chain management involves not only the development of new products and processes but also the creation of systems and structures that support sustainable practices across all levels of the supply chain. Therefore, investment in R&D must be seen not just as a tool for innovation but as a strategic enabler for long-term sustainability performance.

In conclusion, the findings highlight the significant role of R&D investment in enabling sustainable supply chain practices, influencing both the timing of adoption (RQ2) and addressing delays in adoption (RQ1). Firms that prioritise R&D are more likely to adopt sustainable practices sooner, as they are better equipped to innovate and manage the complexities of sustainability in the supply chain. However, challenges related to resource allocation, evolving regulations, and the need for continuous supplier monitoring highlight the difficulties many firms face in making these investments. Overcoming these barriers requires a long-term commitment to sustainability, supported by both financial and human resources, and a strategic focus on R&D as a core element of supply chain management.

5.2.4.4 Summary and Implications

This section highlights the pivotal role of organisational initiatives and innovation in driving the adoption of sustainable supply chain practices, emphasising the importance of leadership, investment in R&D, and overcoming internal barriers. Strong leadership commitment to sustainability is essential for accelerating the adoption process and ensuring alignment across the organisation. The findings support the view that top management's strategic vision and clear communication foster a culture of sustainability that drives both employee engagement and interdepartmental collaboration, which are critical for innovation. Innovation in processes, systems, and technologies enables firms to develop sustainable supply chains, positioning them as leaders in competitive markets. However, the study also underscores that when firms adopt a reactive, compliance-driven approach, rather than pursuing proactive innovation, the timing of adoption is delayed. This highlights the need for organisations to focus on sustainable innovation not merely as a response to regulation but as a strategic priority that can generate long-term competitive advantage. The findings are consistent with previous research by Pagell and Wu (2009) and Porter and van der Linde (1995), yet they challenge the assumption that sustainability-driven innovation automatically leads to market differentiation. In reality, resource limitations, cultural resistance, and knowledge gaps often act as significant barriers that hinder the pace of adoption.

Furthermore, the study reveals that internal barriers, including fear of failure and insufficient knowledge, significantly impact the timing and success of sustainable supply chain adoption (RQ1 and RQ2). Organisations with a risk-averse culture or a limited understanding of sustainability technologies are more likely to delay adoption, demonstrating the need for internal capacity-building and knowledge management. The findings call for firms to invest not only in R&D to develop sustainable practices but also in training and capacity-building initiatives to address knowledge gaps

and mitigate the fear of failure. This strategic investment in innovation and organisational culture is critical for overcoming delays in adoption and enabling firms to adopt sustainable practices more swiftly and effectively. In line with Ageron et al. (2012), the research shows that sustainability cannot be achieved through technological innovation alone; organisational culture, leadership commitment, and effective collaboration are equally essential. The study emphasises that overcoming internal barriers, aligning internal resources, and fostering a culture of sustainability will enable firms to make quicker transitions to sustainable supply chain practices, thus addressing both RQ1 and RQ2.

5.2.5 Theme 5: Resource Constraints and Timing Challenges – Resource Limitations Create Barriers to Immediate Action

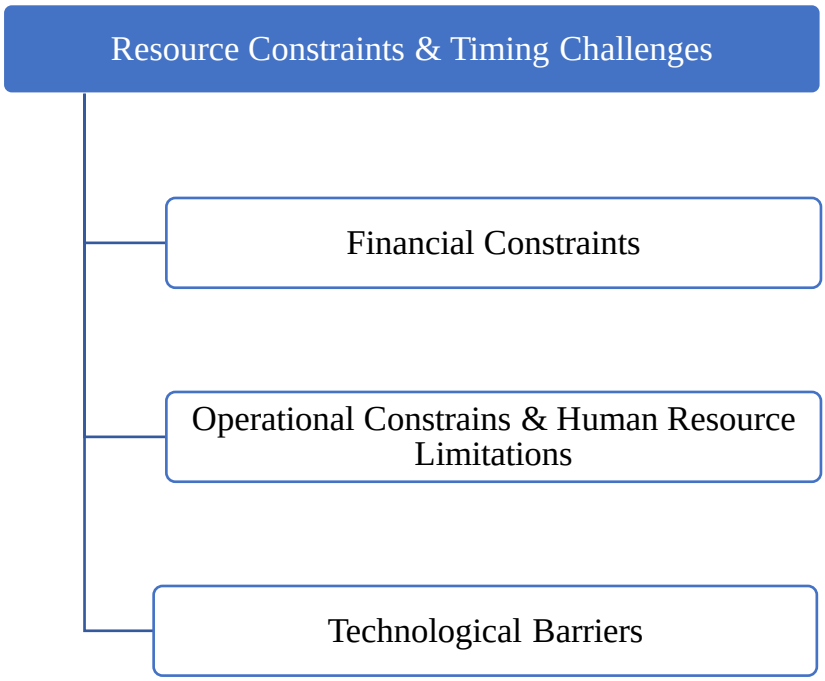
Resource constraints are one of the most persistent challenges to the timely adoption of SSCM practices. Firms frequently face financial, operational, and human resource limitations that hinder their ability to act swiftly in implementing sustainable practices. The subthemes of financial constraints, operational constraints, human resource limitations, and technological barriers are examined in this theme.

Subthemes:

- **Financial Constraints**: Delays in securing funds for sustainability initiatives.
- **Operational Constraints**: Resource allocation issues and capacity limits in adopting sustainable practices.
- **Human Resource Limitations**: Shortages of skilled personnel and expertise delaying the integration of sustainable practices.
- **Technological Barriers**: Challenges in accessing or deploying necessary technologies for sustainable operations.

Link to RQ1 & RQ2: This theme examines how limited resources, whether financial, human, or technological, create significant barriers to the timely adoption of sustainable practices. It will be analysed in terms of how these constraints influence the timing of adoption (RQ2) and contribute to delays (RQ1).

Figure 16: Theme 5: Resource Constraints and Timing Challenges



5.2.5.1 Financial Constraints

The findings of this study highlight that financial constraints are a primary barrier to the timely adoption of sustainable supply chain practices, directly linking to both RQ1 and RQ2. Limited financial resources often delay organisations' ability to invest in sustainability initiatives, particularly those involving high upfront costs. This challenge is especially pronounced in SMEs, which are more vulnerable to financial limitations compared to larger corporations. The findings align with Chien and Shih (2021), who note that financial barriers are especially prominent in SMEs when implementing environmental management practices, especially in the absence of green financing or external funding. The costs associated with adopting sustainable technologies, such as renewable energy systems, eco-friendly materials, or sustainable packaging, often require substantial initial investments, which many organisations find difficult to secure. Furthermore, industries with low margins or high competition often perceive these investments as too risky or too costly, leading to delays in adoption and a slow pace of transition to sustainable practices (Hart & Dowell, 2011). This finding directly addresses RQ1, identifying financial constraints as a key reason for delays in adopting sustainable supply chain practices.

Moreover, the research provides a nuanced interpretation of how past supply chain disruptions influence financial decision-making, particularly in relation to risk management. Organisations that

have experienced supply chain disruptions, such as those caused by natural disasters or geopolitical events, understand the long-term costs associated with business interruptions (Jabbarzadeh, Fahimnia, & Sabouhi, 2018; Kumar & Sharma, 2021). While these organisations recognise the importance of sustainability in mitigating such risks, securing the necessary funds to implement sustainability initiatives remains a challenge. This is consistent with the findings of Zsidisin et al. (2020), who argue that while firms increasingly acknowledge the financial benefits of sustainable practices, many still struggle to allocate sufficient funds for their adoption, particularly during periods of economic uncertainty. The data reflects this challenge, as companies often hesitate to make capital outlays for sustainability without clear, immediate returns. Despite the long-term financial advantages of sustainability, such as cost reductions and resource optimisation (Carter & Rogers, 2008; Porter & van der Linde, 1995), organisations are reluctant to make substantial investments due to concerns over short-term financial pressures. This aligns with Dangelico and Pujari's (2010) assertion that while firms recognise the potential for cost savings from sustainable practices, financial constraints often lead them to favour short-term, incremental improvements rather than more significant, transformative investments.

Additionally, the study highlights the financial burden faced by smaller suppliers when seeking sustainability certifications. The costs associated with obtaining sustainability certifications often serve as a significant barrier, particularly in regions where such practices are well-established but still costly for smaller firms. Awaysheh et al. (2021) also highlighted the challenges smaller firms face in obtaining certifications due to the financial outlay required. This lack of financial support for smaller enterprises limits their ability to adopt sustainable supply chain practices, preventing them from accessing markets that demand sustainability credentials, thus contributing to delays in adoption. This reinforces the findings from Lee et al. (2021), who suggest that knowledge gaps and the lack of internal expertise are compounded by financial constraints, leading smaller firms to adopt a "wait-and-see" approach, further delaying adoption.

Overall, while the findings align with existing literature on the economic benefits of SSCM (Carter & Rogers, 2008; Zsidisin et al., 2020), they also underscore the significant financial barriers that prevent the adoption of these practices. These barriers, particularly for SMEs, often outweigh the potential long-term benefits of sustainability. The study challenges the conventional view that firms delay adoption purely due to a lack of awareness or market pressure. Instead, it reveals those financial limitations—coupled with high initial costs, the complexity of securing funding, and the perceived financial risks—are central to delays in the adoption of sustainable practices. This critical analysis

suggests that addressing financial constraints is essential for accelerating the adoption of sustainable supply chain practices. Specifically, financial support, green financing options, and government subsidies could help mitigate these challenges, enabling SMEs to more easily transition to sustainable practices and accelerating the pace of adoption across industries.

5.2.5.2 Operational Constraints Human Resource Limitations

The findings of this study highlight that operational constraints related to resource allocation and capacity limits are significant barriers to the timely adoption of sustainable supply chain practices (SSCM). These constraints directly affect both the underlying reasons for delays in adopting sustainability initiatives (RQ1) and the factors influencing the timing of their adoption (RQ2).

Organisations, particularly SME), often face significant challenges in allocating sufficient resources to sustainability efforts. SMEs, in particular, struggle with balancing sustainability initiatives against other pressing operational priorities. This results in delays in adoption, as these organisations lack the financial and operational flexibility to dedicate resources to sustainability. As Johnson et al. (2020) note, SMEs often face severe resource constraints that limit their ability to invest in the necessary infrastructure for sustainability, such as renewable energy or eco-friendly materials. The allocation of limited resources to these areas creates prioritisation challenges, meaning sustainability projects are often delayed in favour of more immediate, short-term concerns.

The perceived lack of organisational capacity also contributes to delays in adoption. Many firms feel they do not have the infrastructure, expertise, or operational scale to implement large-scale sustainability initiatives. This perception often leads to a preference for smaller, incremental changes rather than the systemic transformations needed for long-term sustainability. These findings align with Sharma et al. (2021), who argue that the scope and timing of sustainability adoption are heavily influenced by the capacity available within the firm. Organisations that lack the necessary resources, technology, or skilled personnel often hesitate to pursue ambitious sustainability goals, instead focusing on limited, less impactful actions.

Moreover, the timing of adoption (RQ2) is directly impacted by the challenges of resource allocation. Integrating sustainability into core operations requires the reallocation of financial, human, and technological resources, which is often a time-consuming process. Organisations need to balance the long-term benefits of sustainability with their short-term operational needs, leading to delays in full adoption. Bateman et al. (2022) support this argument, highlighting that resource reallocation can slow the pace of sustainability adoption as firms adjust their strategic goals and priorities.

The capacity to scale sustainability initiatives is another crucial issue. Larger firms with more extensive resources may have the ability to implement broad sustainability measures across their supply chains, while smaller firms, constrained by financial and operational limits, may only be able to implement smaller-scale initiatives or pilot programs. This is consistent with Walker and Jones (2020), who argue that smaller firms face significant challenges in scaling sustainable practices and often delay large-scale implementations for more manageable projects that do not always yield immediate, measurable results.

In conclusion, operational constraints related to resource allocation and capacity limits have a profound impact on both the timing and scale of sustainability adoption. Firms must not only allocate sufficient resources but also ensure they have the operational capacity to implement meaningful, large-scale changes. Without addressing these barriers, organisations will continue to face delays in adopting sustainable practices, despite the increasing importance of sustainability for long-term business success. To overcome these constraints, firms may need to explore innovative strategies, such as cross-functional collaboration, industry partnerships, or external support, to enhance their capacity for adopting sustainability practices.

5.2.5.3 Technological Barriers

The adoption of sustainable practices within supply chains is significantly hindered by technological barriers, particularly the challenges firms face in accessing or deploying the technologies required to support these efforts. Many organisations, especially those with outdated infrastructure or limited technical capacity, struggle to implement tools that enable them to measure environmental impact or ensure supply chain transparency. As Tate et al. (2010) suggest, these technological limitations often require substantial investment, which firms may delay or avoid until adequate resources are available. This study confirms that these barriers, both in terms of financial investment and technical capacity, contribute directly to delays in adopting sustainable practices, particularly in the context of supply chain operations.

The findings of this study underscore the critical role of technology in enabling sustainable sourcing practices, with particular emphasis on the use of digital tools like blockchain and traceability systems. These technologies help verify the origin and sustainability of raw materials, ensuring that organisations can meet increasingly stringent environmental and ethical standards. Recent literature highlights the growing importance of such technologies in ensuring transparency across supply chains. For instance, Karamchandani et al. (2021) discuss how blockchain can improve the traceability of products, facilitating responsible sourcing practices and providing stakeholders with the confidence

that products are ethically produced and sustainably sourced. However, the cost and complexity of implementing these technologies often present a significant barrier to smaller firms or those with limited technical expertise, a challenge that is reflected in our study's findings.

In terms of addressing these technological barriers, one major challenge that firms face is the complexity of managing stakeholder interests, particularly when it comes to implementing significant changes to product packaging or sourcing strategies. Retailer resistance to changes in packaging, for example, can stem from concerns over cost, logistics, and product demand forecasting. These concerns are often compounded by a lack of technological tools to accurately predict demand, manage inventory, and optimise distribution in multi-format product landscapes. This finding is consistent with the work of Pagell and Wu (2009), who note that managing operational complexity in sustainable supply chains requires both advanced technology and cross-functional collaboration. Leveraging technology to optimise these processes becomes crucial for overcoming such barriers and ensuring the effective integration of sustainability initiatives.

Additionally, a key barrier identified in this study is the limited availability of sustainable alternatives, such as eco-friendly materials or energy-efficient technologies. Organisations face challenges in identifying and deploying such alternatives, particularly when they are not readily available in the market or are cost prohibitive. This reinforces findings by Johnson et al. (2020), who argue that firms must invest in R&D or collaborate closely with suppliers to explore and identify viable sustainable alternatives. This process requires a careful balancing of environmental goals, customer satisfaction, and economic feasibility, further complicating the adoption of sustainable practices.

The relationship between technological barriers and the timing of adoption (RQ2) is critical. Firms often struggle to synchronise the integration of sustainability initiatives with the broader technological infrastructure of their operations. This misalignment can delay the adoption of sustainable practices, as organisations must first overcome technical constraints before implementing larger, more impactful sustainability projects. Bateman et al. (2022) support this, suggesting that the slow pace of technological innovation and the high cost of new technologies can significantly impact the speed at which sustainability practices are adopted.

In conclusion, technological barriers—ranging from outdated infrastructure to the high cost of deploying new technologies—represent a significant constraint on the adoption of sustainable supply chain practices. Organisations must address these barriers by prioritising investment in the technologies that enable sustainability, collaborating with suppliers to access sustainable alternatives,

and utilising digital tools to enhance transparency and efficiency. Without overcoming these technological challenges, firms will continue to face delays in adopting sustainable practices, hindering their ability to meet long-term environmental and business goals.

5.2.5.4 Summary and Implications

The findings from this study provide a comprehensive understanding of the underlying reasons for delays in adopting sustainable supply chain management (SSCM) practices. The study highlights the significant role of financial, operational, human, and technological constraints in hindering the timely adoption of sustainability initiatives. In response to Research Question 1 (RQ1), the results suggest that firms delay the adoption of SSCM practices due to challenges in resource allocation, the high upfront costs associated with sustainability initiatives and limited internal expertise. Organisations often prioritise short-term operational goals over long-term sustainability objectives, and until the perceived risks of inaction outweigh the costs and disruptions associated with adopting sustainable practices, they hesitate to take action. Financial constraints, such as the inability to justify the costs without immediate returns or the lack of external incentives, are central to these delays. Additionally, operational challenges, such as the disruption caused by reallocating resources to sustainability efforts or changing supply chain processes, contribute to firms postponing their sustainability goals. These barriers significantly affect the timing of adoption, as firms typically delay action until they have sufficient resources, expertise, and operational flexibility to implement sustainability initiatives without jeopardising their existing operations.

In addressing Research Question 2 (RQ2), the study reveals that the timing of adoption is primarily influenced by the availability of resources and the costs associated with implementing sustainable practices. The findings suggest that firms delay adopting sustainability measures until external pressures—such as market demands, customer expectations, or regulatory changes—make the transition more financially justifiable. For many firms, particularly those with limited operational scale or outdated technologies, the transition to sustainable practices is seen as a disruptive process that requires careful planning and significant investment. The lack of access to appropriate technologies, such as digital tools for traceability or environmental impact measurement, further delays the adoption process. Additionally, the need for skilled personnel to drive these initiatives often leads firms to wait until they can recruit or train the necessary expertise. Overall, the study confirms that resource constraints, particularly financial and operational limitations, are key factors shaping when firms decide to implement sustainable practices. As a result, firms typically delay adoption until they feel

confident that the benefits outweigh the costs and risks of transition, a pattern that reflects the broader challenge of integrating sustainability into supply chain operations.

5.2.6 Summary

This study examined key barriers to the adoption of sustainable supply chain management (SSCM) practices, revealing a complex interplay between institutional pressures, timing considerations, organisational barriers, supplier collaboration, and resource constraints. The findings highlight several significant factors that influence both the reasons for delays and the timing of SSCM adoption.

Institutional Pressures: The study underscores the importance of external pressures, such as regulatory requirements, market competition, and consumer demand, in shaping the timing of adoption. Coercive pressures, like regulatory mandates, were found to influence firms' decisions, but the study also highlights the inertia that firms experience even under these pressures. For example, one participant noted that without explicit legal requirements (e.g., "unless someone says right, we are going to make DVD packaging illegal"), firms may delay adoption. This suggests a more advanced relationship between regulatory mandates and organisational action, where firms may act only when pressured externally, rather than proactively adopting sustainability practices. This finding complements institutional theory, which posits that both external pressures and internal capabilities influence organisational change.

Timing of Adoption: The findings show that timing plays a critical role in SSCM adoption. Firms often delay adopting sustainable practices until external pressures compel them or the perceived risks of inaction outweigh the costs. A key insight from the study is that adoption is typically gradual, with firms adopting SSCM practices in phases to mitigate risk and ensure long-term viability. This challenges the assumption that firms can transition quickly to sustainable practices, suggesting that incremental strategies are often preferred. The study also points to the need for further research into internal factors such as organisational culture and readiness, which may also impact the timing of adoption.

Enablers and Barriers: The study identifies a complex interaction between enablers and barriers to adoption. Financial incentives, such as government grants or subsidies, were found to be critical enablers, but the perceived high costs of implementation remain a significant barrier. Quotes like “one of the main challenges firms face in complying with industry standards... is the complexity and cost associated,” suggest that while external financial incentives exist, they may not be sufficient to overcome the perceived financial burden of sustainable practices. This duality calls for a deeper

exploration of the interplay between enablers and barriers, as firms must balance these factors when considering adoption.

Supplier Collaboration: The findings indicate that strong supplier relationships and partnerships are essential for the timely adoption of sustainable practices. Firms that work closely with suppliers to ensure transparency, share knowledge, and co-develop sustainability initiatives are more likely to adopt sustainable practices. This is consistent with the view that supplier pressure and collaboration can drive adoption, particularly in industries where consumer demand for sustainability is high. However, some firms face challenges in engaging suppliers, particularly when suppliers are reluctant to adopt sustainability practices themselves.

Resource Constraints: The study's findings align with existing literature by highlighting that financial, operational, technological, and human resource limitations are central to delays in adopting SSCM practices. Financial constraints often stem from the high upfront costs of sustainability initiatives, while operational constraints arise from challenges in reallocating resources or capacity limits. Additionally, technological barriers, such as the inability to access or deploy the necessary technologies for sustainable operations, and human resource limitations, such as a lack of skilled personnel, exacerbate delays. This underscores the importance of addressing these resource limitations to facilitate quicker adoption.

In conclusion, the study provides valuable insights into the complex dynamics that influence the adoption of SSCM practices. It demonstrates that institutional pressures, financial and operational constraints, and supplier collaboration play crucial roles in determining the timing of adoption. The findings also highlight the need for incremental adoption strategies, rather than expecting firms to transition quickly to sustainability. This understanding of SSCM adoption, informed by both institutional theory and the resource-based view, offers important theoretical and practical implications. Organisations should focus on addressing resource constraints, leveraging external pressures, and fostering strong supplier relationships to overcome barriers and accelerate sustainability adoption. Future research could explore the specific challenges faced by SMEs in overcoming these constraints, as well as the role of leadership in driving sustainability efforts within organisations.

Building on the insights from this study, the next section will focus on the re- examination and refinement of the conceptual framework for SSCM. The findings highlight key factors influencing adoption, including institutional pressures, resource constraints, and organisational dynamics. By integrating these results, the framework can be adjusted to better capture the complexities

of timing and barriers to adoption, offering a more complex view of SSCM. This refinement will provide valuable implications for both theory and practice moving forward.

5.3 Revised Conceptual Framework

This section revisits the study's findings in relation to the original conceptual framework, critically evaluating the literature and focusing on five key themes that emerged during the analysis. These themes enhance understanding of the factors influencing the timing and adoption of SSCM practices. The revised framework refines existing theories and introduces new propositions about the complex dynamics shaping the adoption process. The study identified five primary themes that contributed to the delays and motivations behind adopting SSCM practices:

Operational Constraints: Financial and technological barriers emerged as critical obstacles in the timely adoption of sustainable supply chain practices. High costs, lack of access to sustainable technologies, and limited financial resources delay adoption, particularly in organizations that have limited capital or face competing investment priorities. In addition, organizational resource limitations and technological gaps (e.g., infrastructure challenges) significantly impede swift implementation.

Institutional Influences: Regulatory pressures, peer pressures, and market competition were found to be driving forces in the adoption of SSCM practices. Regulatory requirements at both local and global levels create deadlines and urgency for firms to implement sustainable practices. Additionally, market dynamics—especially consumer demand for sustainability and industry competition—accelerate adoption. However, institutional pressure alone is not enough to ensure quick adoption; organizations need adequate internal capabilities and leadership to respond effectively to these external pressures.

Timing Considerations: Timing plays a crucial role in how firms adopt SSCM practices. The adoption process is often incremental, with firms integrating sustainability in stages to manage risk, adjust internal processes, and align with evolving regulations and market demands. This finding challenges the assumption that firms can quickly transition to full sustainability. Instead, it highlights the need for phased adoption strategies that reflect the complexity of the transition.

The revised conceptual framework integrates these findings, providing a clearer understanding of the factors influencing SSCM adoption. The original framework emphasised the interaction between institutional pressures, timing of adoption, and internal enablers and barriers. Based on the

study's findings, several key adjustments were made to the framework to better reflect the empirical data. Each is listed below:

Emphasis on Mimetic Pressures

- **Original Framework**: The initial framework primarily focused on coercive pressures (e.g., regulations, legal requirements) as the central driver of SSCM adoption. While market forces and competition were acknowledged, were not emphasised as significant motivators.

- **Revised Framework**: The revised framework incorporates mimetic pressures as a critical factor in the adoption of SSCM practices. These pressures are often driven by competitive behaviour and market dynamics, where firms are influenced not only by regulatory requirements but also by the actions of competitors and prevailing industry trends. This shift highlights that firms are increasingly responding to competitive pressures, particularly in dynamic industries were staying ahead of or keeping pace with competitors is crucial.

Inclusion of Critical Events

- **Original Framework**: The initial conceptual framework did not explicitly account for the role of critical events, such as leadership changes, supply chain crises, or other unpredictable events, which can alter the adoption trajectory of SSCM practices.

- **Revised Framework**: The revised framework introduces critical events as a catalyst for accelerating SSCM adoption. These events can disrupt the status quo, forcing firms to adopt sustainable practices more quickly than they would have under normal circumstances. This revision acknowledges that external or internal shocks, such as an industry crisis or leadership change, can significantly impact the timing of adoption, even overriding other more gradual drivers.

Expanded Internal Enablers and Barriers

- **Original Framework**: The original framework identified financial resources and awareness as the primary internal barriers and enablers for SSCM adoption. It did not fully account for other internal factors, such as cultural resistance or operational complexities.

- **Revised Framework**: The revised framework significantly expands the range of internal factors. Internal enablers now include cultural alignment, process maturity, and leadership commitment, all of which play crucial roles in the successful adoption of SSCM practices.

Conversely, the framework also includes legacy systems, competing financial priorities, and technological constraints as barriers that can impede progress.

Dynamic Role of Timing

- **Original Framework**: The initial framework treated timing as a relatively passive outcome of external pressures (e.g., regulations) and internal readiness. Timing was seen as something that naturally follows these factors, without a deep exploration of its role as an active mediating force.

- **Revised Framework**: The revised framework portrays timing as an active, mediating factor that influences and is influenced by both institutional pressures and organizational dynamics. Timing is now seen as a dynamic element that shapes how firms interpret and respond to external pressures. Additionally, the framework acknowledges delayed decision-making as a subcategory of timing, suggesting that organizations often prioritize SSCM adoption based on strategic readiness and evolving market conditions.

5.4 How the New Findings Changed the Initial Framework

This section explores how the findings from the study prompted specific changes to the initial framework, providing a more comprehensive and dynamic view of SSCM adoption.

5.4.1 View of Institutional Pressures

The study's findings highlighted the complexity of how institutional pressures influence adoption. The addition of sub-categories within institutional pressures has refined the original framework:

- **Regulatory Expectations vs. Enforcement**: The revised framework now differentiates between regulatory expectations (the pressure to meet sustainability goals) and regulatory enforcement (how strictly regulations are implemented and enforced), emphasizing that the response to regulatory pressure is contingent on the perceived enforcement strength.

- **Mimetic Pressures**: Mimetic pressures, previously an underexplored factor, are now reframed as a significant driver, reflecting the competitive behaviour of firms and the market trends that shape adoption timelines.

5.4.2 Critical Role of Timing

- **Active Mediator**: The revised framework shifts the role of timing from being a passive consequence to an active mediator between institutional pressures and adoption outcomes. It

underscores how timing is both a strategic decision and a dynamic factor influenced by various drivers, including organizational culture, leadership, and market conditions.

- **Delayed Decision-Making**: The framework now includes delayed decision-making as an important subcategory within timing, reflecting how firms often take time to assess their readiness and strategy before committing to sustainable practices. This subcategory acknowledges that internal readiness, strategic alignment, and external market conditions all play roles in shaping the adoption timeline.

5.4.3 Internal Dynamics

- **Cross-Departmental Support**: The revised framework integrates cross-departmental support and process alignment as essential enablers that help firms adopt SSCM practices smoothly. Internal silos and lack of coordination were recognized as barriers to swift implementation.

- **Competing Financial Priorities**: The study found that firms often face competing priorities when deciding how to allocate limited resources. The revised framework incorporates competing financial priorities as a barrier, acknowledging that sustainability initiatives often compete for resources against other strategic projects.

5.5 New Propositions Emerging from the Revised Framework

The revised framework gives rise to several propositions that extend the theoretical understanding of SSCM adoption. These propositions provide new avenues for both research and practical application.

1. **Proposition 1**: Firms are more likely to adopt SSCM practices when mimetic pressures, such as competitor actions, align with internal readiness and strategic priorities. This suggests that firms in highly competitive industries are motivated to adopt SSCM when competitors are leading the charge, provided that they have the internal capacity to do so.

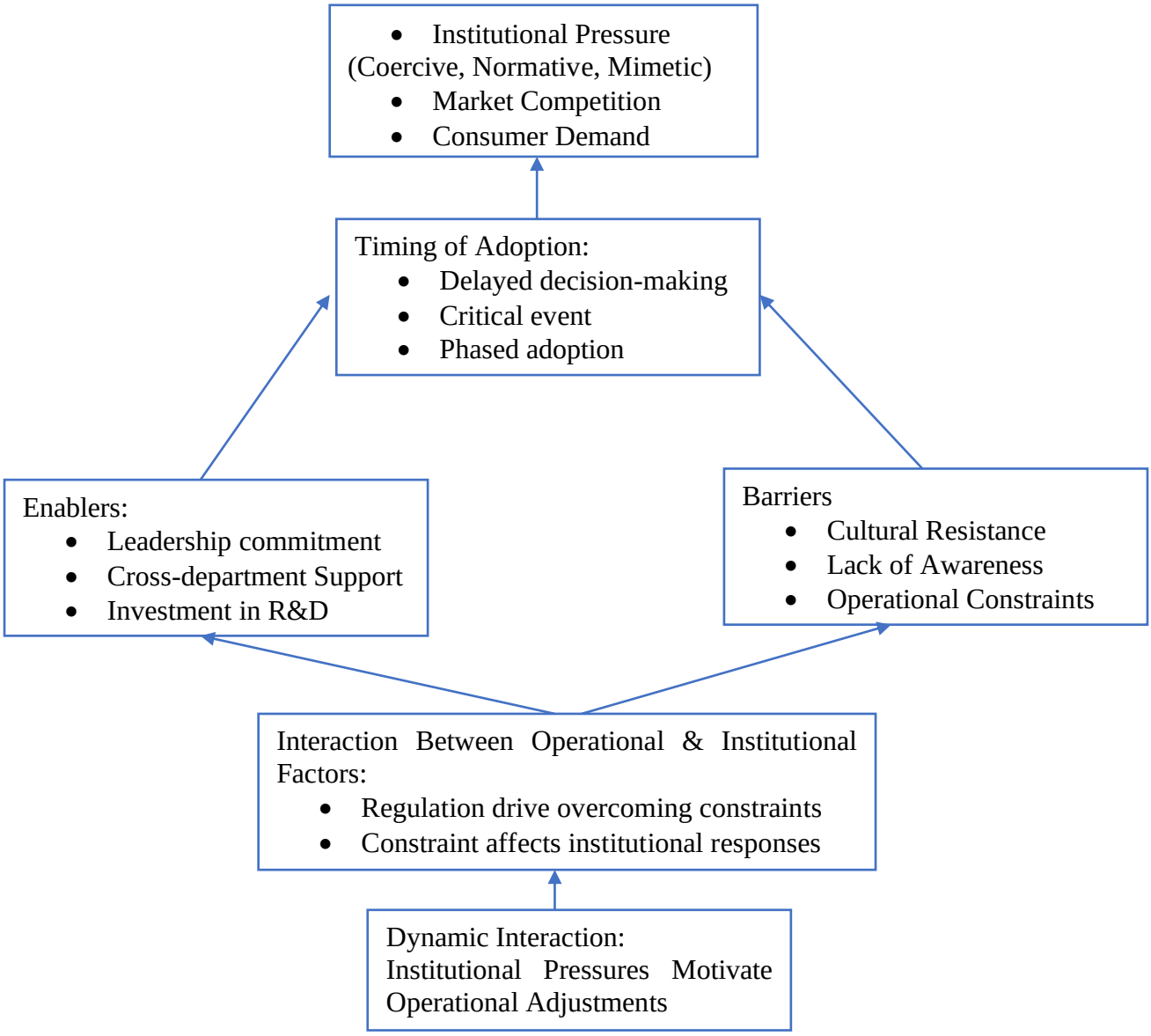
2. **Proposition 2**: Critical events, such as supply chain disruptions or leadership changes, serve as catalysts that accelerate SSCM adoption, regardless of organizational readiness. These events can trigger a faster-than-planned adoption process, forcing firms to act more swiftly in response to unexpected disruptions.

3. **Proposition 3**: Organizational culture and process maturity significantly influence the timing of SSCM adoption, acting as both enablers and barriers. Firms with a strong culture of

innovation and collaboration are more likely to adopt SSCM practices early, while those with entrenched processes or resistance to change may delay adoption.

4. **Proposition 4**: Timing mediates the relationship between institutional pressures and adoption outcomes, influencing how firms perceive and respond to external and internal factors. Timing influences the urgency and pace of adoption, as firms adjust their strategies in response to both external demands and internal constraints.

Figure 17: Refined Conceptual Framework



5.5.1 Revised Conceptual Framework

This revised framework emphasises the dynamic nature is seen in figure 17.

Institutional Pressures: Coercive, Normative, and Mimetic Pressures remain central to understanding how institutional forces shape the adoption of SSCM practices. However, the revised framework emphasizes the interplay between regulatory pressures, industry standards, and market competition. It also includes consumer demand as a critical driver of adoption.

Key Adjustments:

- Institutional Pressures: The framework integrates coercive, normative, and mimetic pressures, with a focus on market competition and consumer demand as key drivers alongside traditional regulatory pressures.
- Timing of Adoption: Acknowledges that SSCM adoption is incremental and influenced by both external pressures and internal readiness. Key concepts include delayed decision-making and critical events that push for faster adoption.
- Internal Enablers and Barriers: Expands to include leadership commitment, cross-departmental support, and organizational culture as enablers. Barriers include cultural resistance and operational constraints.
- Interaction Between Operational and Institutional Factors: The revised framework reflects the dynamic interaction between operational constraints (e.g., financial, technological) and institutional pressures (e.g., regulations, competition).

Table 9: Revised Conceptual Framework Components

Category	Components
Institutional Pressures	Coercive (Regulatory Expectations vs. Enforcement), Normative (Standards vs. Realities), Mimetic (Varied Timelines)
Timing of Adoption	Delayed Decision-Making (Organisational Readiness, Strategic Prioritisation), Critical Events Incorporate Organisational Readiness and Strategic Prioritisation as key components affecting timing.
Enablers	Financial (Budget Prioritisation), Awareness (Cross-Departmental Support), Resource Availability (Process Alignment)
Barriers	Risk Assessment (Performance Pressures), Feasibility (Capability Limitations, Operational Constraints)
Timing Effect	Interactive, influencing Institutional Pressures and Enablers, and impacting Organisational Dynamics and Readiness

The revised conceptual framework provides a more comprehensive understanding of the factors influencing SSCM adoption. It incorporates new insights, such as leadership's role, external pressures, and timing dynamics. The interaction between operational constraints and institutional pressures is now better understood, and the importance of incremental adoption is emphasized. These updates offer

both theoretical contributions and practical guidance for firms looking to navigate sustainable supply chain practices.

5.6 Chapter Summary

This chapter has examined the key findings of the study and their implications for the adoption of Sustainable Supply Chain Management (SSCM) practices. The findings underscore the complexity of the adoption process and highlight several key factors—ranging from internal operational constraints to external institutional pressures—that influence the timing and pace of adoption. These insights have led to the refinement of the initial conceptual framework, offering a more nuanced understanding of how firms adopt sustainable practices.

5.6.1 Key Findings and Conceptual Framework Refinements

One of the central contributions of this study is the identification of key barriers and enablers to SSCM adoption, which are critical to understanding the adoption process. Operational constraints such as financial limitations, lack of technological infrastructure, and human resource shortages emerged as significant barriers. These challenges often delay or impede the implementation of SSCM practices, particularly when firms lack the necessary resources to comply with external pressures such as regulations or market demands. The study revealed that while firms may recognize the need for sustainability, they may struggle to act on it due to insufficient internal capabilities.

At the same time, several enablers were identified that can accelerate adoption. These include strong supplier collaboration, leadership commitment, and innovation in internal processes. The findings suggest that when firms actively engage with their suppliers, share knowledge, and align sustainability goals, they can overcome operational constraints and expedite the adoption process. Furthermore, leadership commitment—particularly at the executive level—was found to be crucial in driving the sustainability agenda within organizations. Leaders who are both proactive and strategic in allocating resources toward sustainability are better able to align internal and external pressures, leading to more timely adoption.

A significant insight from the study is the dynamic role of timing in SSCM adoption. The study found that the adoption of SSCM practices is often a gradual process, with firms implementing practices in phases to manage risks and ensure long-term viability. This finding challenges the traditional view that firms can immediately transition to sustainable practices and supports the idea that adoption is a phased process driven by both internal and external factors. Timing, therefore, plays a dual role—it is influenced by both institutional pressures (e.g., regulations and market demand) and internal factors

such as organizational readiness and resource availability. Moreover, the study revealed that critical events, such as leadership changes or regulatory shifts, can act as catalysts that accelerate adoption, especially when firms are already aligned with the broader institutional pressures.

These findings have contributed to the refinement of the initial conceptual framework. The revised framework now includes a more in-depth view of institutional pressures and their interactions with organizational dynamics. It recognizes that while coercive pressures (e.g., regulations) remain significant, mimetic pressures—driven by competitive behaviours and market trends—are also crucial in shaping adoption timelines. The framework also highlights the role of critical events, which were previously overlooked in the original framework. These events, such as changes in leadership or external disruptions like supply chain crises, can drastically alter adoption timelines and strategies.

The framework now also places greater emphasis on the interactions between internal enablers and barriers. Internal organizational factors such as cultural alignment and process maturity are now seen as key enablers, while legacy systems and financial constraints are critical barriers. This more comprehensive view acknowledges that organizations often face competing priorities—such as balancing short-term financial goals with long-term sustainability objectives—which can impact the timing and success of SSCM adoption.

This chapter has highlighted the complexity of adopting sustainable supply chain practices and has provided valuable insights into the factors influencing adoption timelines. The study's key findings—regarding operational constraints, the dynamic role of timing, and the interplay between institutional pressures and organizational readiness—have led to the refinement of the initial conceptual framework, making it more responsive to the realities faced by firms in different contexts.

The revised framework now provides a more dynamic and interactive model of SSCM adoption, where institutional pressures, organizational readiness, and timing all interact in shaping adoption outcomes. This model underscores the importance of both external and internal factors in determining the pace and success of SSCM adoption, and it positions timing as a central factor in understanding how firms navigate the complexities of sustainability.

By offering a more detailed view of SSCM adoption, this study provides both theoretical and practical contributions to the field. In the following chapter, the theoretical implications, practical insights, and suggestions for future research will be discussed in detail, along with the limitations of the study and potential areas for further exploration.

In Chapter 6, we will consolidate the key findings and discuss their broader theoretical and practical implications. Additionally, we will reflect on the limitations of the study and propose directions for future research, which could further explore the unresolved questions and new avenues for inquiry revealed by this study.

6 Chapter VI Conclusion

This chapter reflects upon the research findings and discusses the contribution of this research and the practical implications for the firm. The chapter re-examines the research propositions and questions articulated at the outset, assesses their alignment with the outcomes presented in the Analysis Chapter and Findings Chapter and demonstrates how the study's objectives have been addressed. The chapter is arranged as follows:

Section 6.1 Revisiting Propositions: establishes a direct link between the initial research objectives and the subsequent analyses presented in the preceding chapters. By revisiting the research propositions and questions, this section reinforces the study's cohesiveness and ensures that the investigation remains tethered to its original goals.

Section 6.2 Theoretical Framework and Research Question Resolution: the theoretical framework is presented to provide a deeper understanding of the research questions. This section integrates the insight gathered during the literature review with the empirical findings for this research. It facilitates the interpretation of the factors influencing the adoption of sustainable supply chain management practices and provides a scholarly exploration of the subject matter.

Section 6.3 Contribution to Knowledge and Practical Implications: focuses on summarising the overall contribution of this research to the existing body of knowledge. It highlights the key findings, theoretical implications, and practical insights derived from the study. The discussion encompasses the significance of the identified factors, their impact on sustainable supply chain management, and their implications for firms seeking to adopt sustainable practices into their operations.

Section 6.4 Limitations and Avenues for Future Research: offers a critical examination of the study's limitations. By acknowledging the constraints and boundaries of the current research, this section points to potential areas that warrant further investigation. These identified avenues for future research underscore the commitment to advancing our understanding of sustainable supply chain management, underscoring the dynamic and evolving nature of this field of study.

6.1 Revisiting New Refined Proposition

In this section, we revisit the four propositions emerging from the revised conceptual framework and explore how they advance theory in the field of SSCM adoption. These propositions offer new insights by emphasizing dynamic factors such as mimetic pressures, timing, and organizational culture, which shift the focus from linear adoption models to a more nuanced understanding of the adoption process. We also discuss the potential for future empirical testing to further validate these propositions, offering new avenues for research to deepen our understanding of the complexities driving sustainable supply chain practices.

6.1.1 Proposition 1: Mimetic Pressures and Internal Readiness

Proposition: *Firms are more likely to adopt SSCM practices when mimetic pressures, such as competitor actions, align with internal readiness and strategic priorities. This suggests that firms in highly competitive industries are motivated to adopt SSCM when competitors are leading the charge, provided that they have the internal capacity to do so.*

How It Advances Theory:

Shifting the Focus from Coercive to Mimetic Pressures: This proposition builds on institutional theory by emphasizing the role of mimetic pressures, imitative behaviour driven by competitors, as a stronger force in SSCM adoption. While much of the existing literature has focused heavily on coercive pressures (e.g., regulatory requirements) and normative pressures (e.g., industry standards), mimetic pressures have been underexplored. By formalizing mimetic pressures as a key motivator, the proposition suggests that firms do not only adopt SSCM practices due to regulatory compulsion but also due to a desire to maintain competitiveness or align with industry trends.

Internal-External Interaction: The proposition also highlights the interaction between external pressures (mimetic) and internal readiness. It suggests that firms with the internal capacity (resources, culture, leadership) to adapt are more likely to adopt SSCM practices when they observe their competitors doing so. This provides a more dynamic view of the adoption process, suggesting that internal capabilities act as an enabler for responding to external mimetic pressures.

Empirical Testing:

Survey/Interview Studies: Researchers can test this proposition through surveys or interviews with managers in different industries, examining how perceptions of competitor behavior influence their adoption decisions, especially when they have the internal capacity (financial, technological, or cultural readiness).

Case Studies: A longitudinal case study of firms in the same industry could explore how firms have responded to competitors' adoption of SSCM practices over time, and how internal factors (like leadership vision or technological capability) influenced the decision to follow suit.

Cross-Industry Comparisons: A comparative study between industries with high competitive pressure (e.g., fast-moving consumer goods) and those with less competitive pressure could provide insights into how mimetic pressures affect adoption.

6.1.2 Proposition 2: Critical Events as Catalysts

Proposition: *Critical events, such as supply chain disruptions or leadership changes, serve as catalysts that accelerate SSCM adoption, regardless of organizational readiness. These events can trigger a faster-than-planned adoption process, forcing firms to act more swiftly in response to unexpected disruptions.*

How It Advances Theory:

Introduction of Critical Events: This proposition advances theory by introducing critical events (e.g., crises, leadership changes, or external shocks like natural disasters or pandemics) as a major influence on SSCM adoption. While the existing literature often treats adoption as a planned, incremental process, this proposition adds a new dynamic element—critical events—that can disrupt the adoption trajectory. This recognizes that adoption is not always linear or predictable; it can be catalyzed by unexpected internal or external events that force firms to act.

Crisis Management and Strategic Flexibility: The proposition also ties into strategic flexibility and crisis management theory. It suggests that firms with strong leadership and the ability to rapidly adjust strategy may adopt SSCM practices in response to a crisis, even if they hadn’t initially planned to do so. This introduces a contextual, reactive dimension to SSCM adoption theory.

Empirical Testing:

Event Studies: Researchers could conduct event studies, examining specific instances where firms adopted SSCM practices following major events (e.g., a supply chain disruption or leadership change). Data could be gathered on the timing of adoption, the nature of the event, and the firm's internal readiness.

Surveys of Crisis Response: Surveys of managers could explore how firms have responded to critical events in the past and how such events influenced decisions to prioritize sustainability initiatives. This

could also involve quantifying how much faster firms adopted SSCM following a crisis or leadership change.

Case Study Methodology: In-depth case studies of firms that underwent significant supply chain disruptions (e.g., due to the COVID-19 pandemic or a major sustainability scandal) could help reveal how these events impacted adoption speed.

6.1.3 Proposition 3: Organizational Culture and Process Maturity

Proposition: *Organizational culture and process maturity significantly influence the timing of SSCM adoption, acting as both enablers and barriers. Firms with a strong culture of innovation and collaboration are more likely to adopt SSCM practices early, while those with entrenched processes or resistance to change may delay adoption.*

How It Advances Theory:

Internal Culture and Change Resistance: This proposition builds on the organizational change theory and resource-based view (RBV) by arguing that firms with a strong innovation culture are more likely to adopt SSCM practices quickly. The proposition acknowledges that culture can either enable or hinder the adoption process, depending on whether it supports or resists change.

Process Maturity as a Barrier or Enabler: The notion of process maturity introduces a more granular understanding of organizational capabilities. Firms with mature processes may struggle to adopt new practices due to entrenched routines, while firms that foster a culture of collaboration and learning may find it easier to integrate new sustainability initiatives.

Empirical Testing:

Survey and Organizational Assessments: Surveys can be used to assess organizational culture (using established scales such as the Competing Values Framework) and process maturity (using models like Capability Maturity Models). These assessments can be linked to the speed and extent of SSCM adoption.

Case Study Comparisons: Researchers can compare firms with varying levels of process maturity and different cultural orientations (e.g., innovative vs. traditional cultures) to understand how these factors influence the adoption process.

Cross-Industry Studies: A cross-industry study could examine whether firms in industries that typically emphasize innovation (e.g., tech firms) adopt SSCM practices more quickly than those in process-driven industries (e.g., manufacturing).

6.1.4 Proposition 4: Timing Mediates the Relationship Between Institutional Pressures and Adoption Outcomes

Proposition: *Timing mediates the relationship between institutional pressures and adoption outcomes, influencing how firms perceive and respond to external and internal factors. Timing influences the urgency and pace of adoption, as firms adjust their strategies in response to both external demands and internal constraints.*

How It Advances Theory:

Reconceptualizing Timing: This proposition shifts the understanding of timing in SSCM adoption. Rather than viewing it as a passive outcome of external and internal factors, it frames timing as an active mediating factor that directly influences how firms interpret and react to institutional pressures. The proposition introduces timing as a dynamic force that can either speed up or slow down adoption, depending on organizational readiness and external pressures.

New Dimensions of Adoption: By conceptualizing delayed decision-making as a subcategory of timing, this proposition acknowledges that firms often do not act immediately in response to external pressures (e.g., regulations, market trends). Instead, they delay adoption until internal conditions (e.g., resources, strategic alignment) are favourable. This adds a temporal dimension to the study of SSCM adoption.

Empirical Testing:

Longitudinal Studies: A longitudinal study could track firms over time to measure the timing of their adoption of SSCM practices relative to external institutional pressures and internal readiness. This would provide insights into how timing impacts the eventual success or failure of adoption.

Experimental Designs: Experimental designs could be used to manipulate perceived urgency (e.g., regulatory deadlines, industry competition) and assess how firms respond to these pressures based on their internal readiness, examining delays in decision-making as a strategic tactic.

The propositions outlined advance the theoretical understanding of SSCM adoption by introducing new variables (e.g., mimetic pressures, critical events, organizational culture, and timing dynamics) that complicate traditional models of adoption. These propositions not only challenge existing theories

but also open up new avenues for research. They suggest that adoption is more complex and dynamic than previously thought, involving an interplay of internal capabilities and external pressures.

6.3 Theoretical Implications

The findings of this study contribute to deepening our understanding of the challenges and barriers firms face in adopting sustainable supply chain management (SSCM) practices. While the risks of maintaining an unsustainable supply chain are evident, several obstacles hinder firms from embracing sustainability. Recent literature has explored these barriers in-depth, providing insights into the complex dynamics of SSCM adoption. For example, Xing, Xia and Guo, (2019) highlight financial constraints, noting that the high costs of implementing sustainable practices often deter smaller organizations with limited resources. Similarly, Gupta, Kusi-Sarpong and Rezaei, (2020), identify the limited availability of sustainable alternatives as a significant barrier, with firms struggling to find suppliers that meet their operational needs while adhering to sustainability standards.

Another key challenge identified in the literature is uncertainty regarding the effectiveness of sustainable practices. According to Gupta, Kusi-Sarpong and Rezaei, (2020) , firms are often hesitant to adopt sustainable practices because of concerns about their potential impact on productivity, operational efficiency, and customer satisfaction. This uncertainty is compounded by internal resource constraints such as a lack of expertise and dedicated personnel to manage sustainable supply chains, as pointed out by Nazam *et al.*, (2020). Moreover, Kim, Colicchia and Menachof, (2018) note that firms may resist sustainable supply chain practices if they anticipate disruptions in existing supplier relationships, increased costs, or a decline in overall supply chain performance.

To overcome these barriers, recent studies underscore the importance of stakeholder alignment and collaboration. For instance, Deng *et al.*, (2021) emphasise the role of stakeholder engagement in fostering sustainable supply chain practices, highlighting the necessity of collaboration with suppliers, customers, and regulatory bodies. Similarly, Pedersen, Gwozdz and Hvass, (2018) identify limited awareness, perceived high costs, and uncertainty about customer demand as key barriers in the food industry, while Walker *et al.*, (2021) identified the importance of coordination among supply chain partners to overcome obstacles to sustainability. Furthermore, Hong *et al.*, (2022) reveal that organizational culture and resistance to change can impede the adoption of sustainable practices, particularly when internal stakeholders such as employees and management are resistant to change.

These findings highlight the multifaceted nature of barriers to SSCM adoption and stress the need for comprehensive strategies to facilitate the transition toward sustainability.

Institutional Theory and SSCM Adoption

Institutional Theory explains the complex interaction between external pressures (e.g., regulatory demands, market trends, societal expectations) and internal barriers (e.g., organizational resistance, financial constraints, operational inertia). This study highlights how these external pressures push firms toward adopting sustainable practices, while internal barriers, such as limited financial resources, resistance to change, and a lack of organizational readiness, serve as significant challenges. This dual dynamic emphasizes that the timing and effectiveness of SSCM adoption are influenced by the alignment between external demands and internal organizational capabilities.

In addition, the study contributes to understanding how institutional logics, the set of cultural norms and shared beliefs within organizations, can either support or hinder the adoption of sustainable practices. When organizations have deeply ingrained traditional practices and beliefs about sustainability, they face greater resistance to change. The findings highlight the importance of institutional readiness, or the alignment between organizational culture and sustainability goals, in facilitating the transition.

Resource-Based View (RBV) and SSCM Adoption

The study also refines the RBV by emphasising the importance of intangible resources, such as leadership commitment, organizational culture, and internal capabilities, as critical enablers of sustainable supply chain adoption. While traditional RBV emphasizes the role of tangible resources (e.g., financial capital, physical assets), this study highlights that the organizational culture and leadership—intangible yet powerful resources, play a significant role in overcoming internal resistance and enabling the alignment of sustainability goals with business strategies.

Furthermore, RBV insights regarding resource allocation are crucial in understanding why firms may delay adoption. Sustainable practices often require upfront investment in resources, technologies, and training. In such cases, firms must strategically allocate resources to meet sustainability goals. The study stresses that organizations with strong intangible resources, such as commitment from leadership and a culture of sustainability, are better positioned to invest in the necessary changes, thereby facilitating a smoother and faster transition.

Institutional Isomorphism and Slow Adoption

The concept of institutional isomorphism is also relevant to understanding how SSCM adoption may be slow or delayed. This study suggests that, while firms often follow similar paths in adopting sustainable practices due to regulatory pressures and market expectations, the slow pace of adoption can be explained by organizational inertia and resistance to institutional change. This delay occurs because firms may need time to adapt their internal structures and processes to external pressures, making the transition more gradual and less uniform.

In sum, this research contributes to Institutional Theory and the Resource-Based View by emphasizing the dynamic and often conflicting forces—external pressures pushing for sustainability and internal barriers limiting adoption—that organizations face when implementing sustainable supply chain practices. It highlights the critical role of intangible resources (leadership, organizational culture) in overcoming internal resistance, as well as the role of institutional logics and readiness in influencing the speed and success of adoption. This theoretical perspective offers a comprehensive framework for understanding the complexities of SSCM adoption and provides avenues for future research on how organizations can better navigate these challenges.

6.1.5 6.3.2 Practical Implications

Incorporating the research findings into operational strategies, firms can overcome barriers to adopting sustainable supply chain practices and unlock the benefits of sustainability. These practical strategies can help firms not only navigate challenges but also leverage the benefits of sustainability in their supply chains:

Strategic Planning for Sustainability

Firms must integrate sustainability goals into their overall business strategy. By embedding sustainability into strategic decision-making, firms can ensure the alignment of their supply chain operations with broader environmental, social, and governance (ESG) objectives. Setting clear sustainability targets will help prioritize resources and investment in sustainable initiatives.

Collaboration and Partnerships

Firms should actively engage in collaborative partnerships with suppliers, customers, and other stakeholders to foster sustainable practices across the supply chain. Collaborative efforts could include sharing knowledge and best practices, developing sustainable technologies, and addressing sustainability challenges together. Engaging stakeholders in sustainability initiatives not only

enhances the implementation of sustainable practices but also helps build a supportive ecosystem that accelerates adoption.

Supplier Evaluation and Selection

Incorporating sustainability criteria into the supplier selection process is key. Firms should assess potential suppliers based on their environmental performance, labor practices, and overall commitment to sustainability. This ensures that the supply chain supports sustainability goals and reduces the risk of delays in adopting sustainable practices. Supplier relationships should be based on shared sustainability values, making collaboration easier and more effective.

Leveraging Technology for Efficiency

Technology adoption is essential for enabling the efficient implementation of sustainable supply chain practices. Firms can utilize digital solutions to monitor and track environmental impacts, optimize logistics and transportation, and improve overall supply chain transparency. Technologies such as Blockchain, IoT, and AI can enhance decision-making, improve supply chain visibility, and reduce the environmental footprint of operations.

Employee Engagement and Training

Engaging employees in sustainability initiatives is vital for fostering a culture of sustainability within the organization. Training programs that increase awareness of sustainability goals and practices will empower employees to embrace sustainable practices and become champions for change within the firm. Employee engagement is a critical enabler of long-term sustainability success.

Reporting and Transparency

Firms should adopt transparent reporting practices to communicate sustainability efforts and progress to stakeholders. This includes publishing regular sustainability reports, disclosing environmental and social performance data, and adhering to recognized reporting standards. Transparency not only enhances stakeholder trust but also holds the firm accountable for its sustainability commitments.

Continuous Improvement and Innovation

Firms should foster a culture of continuous improvement and innovation to stay ahead of emerging trends in sustainability. Encouraging employees to identify opportunities for improvement and supporting innovation in sustainable technologies can help firms adapt to evolving market demands and regulatory pressures. Constantly evaluating and refining sustainable practices will ensure that firms maintain a competitive edge.

Strengthen Leadership Commitment

Organizations must prioritize leadership development at all levels, with a focus on sustainability. A strong commitment from top management can drive organizational change, align sustainability goals with business objectives, and help overcome internal resistance to adopting sustainable practices. When leadership is fully committed, it can energize the entire organization towards sustainability.

Overcome Financial Barriers

Firms can explore financial incentives such as government grants or tax rebates to help mitigate the initial costs of sustainable investments. Additionally, collaboration with suppliers to share the costs of sustainability initiatives can reduce the financial burden and accelerate adoption.

Address Change Management and Resistance

Resistance to change can be mitigated through change management strategies. Training, clear communication from leadership, and creating awareness about the long-term benefits of sustainability can help build employee buy-in and speed up the adoption process.

6.2 Study Limitations

Acknowledging and addressing the inherent limitations of the chosen research design and methodology is crucial. This study employs an inductive qualitative exploratory approach, primarily utilising semi-structured interviews as the primary data collection method. While this approach excels in capturing rich and detailed insights into SSCM, it remains susceptible to researcher interpretation bias. To mitigate this bias, rigorous analysis techniques were employed, enhancing the validity and reliability of the findings. In addition, secondary sources were integrated during the analysis phase to broaden the spectrum of perspectives and insights, enhancing the depth of insight from stakeholders.

Sampling Limitations

A key limitation of this study lies in the sampling strategy, which focused on three supply chain focal firms across different countries. Although this approach provides valuable insights into the challenges and opportunities in SSCM adoption, it imposes constraints on the generalizability of the findings. The relatively small sample size, combined with the diversity in the characteristics of the firms (such as industry, size, and geographical context), means that the results may not be fully representative of the broader population of firms engaging in sustainable supply chains. Future studies with larger and more

varied sample sizes, or more homogeneous selection criteria, could provide a more generalizable set of insights.

Contextual Limitations

The case studies were drawn from firms operating in different industries and countries, each with its own unique factors influencing SSCM adoption. As a result, the contextual limitations of this research must be acknowledged. Different industries and regions may experience varying levels of regulatory pressure, market demand for sustainable practices, or access to sustainable resources. For example, Pedersen et al. (2018) noted that industries such as food may face different barriers to SSCM adoption compared to those in manufacturing or technology. Therefore, future studies could explore how these contextual differences shape the adoption process, providing a more nuanced understanding of SSCM adoption across various sectors and geographical locations.

Timeframe Limitations

The research was conducted within a specific timeframe, which may not fully capture the dynamic nature of sustainability practices or the evolving external environment. Sustainability in supply chains is an ongoing, long-term process, and the external landscape—including regulatory changes, market shifts, and technological advancements—can change significantly over time. For example, the rapid development of new sustainable technologies could influence the adoption rates of SSCM practices in the future. Therefore, a longitudinal study could provide deeper insights into how firms' sustainability practices evolve and adapt over time, offering a more comprehensive view of long-term trends in SSCM adoption.

Qualitative Methodology Limitations

The study primarily relied on qualitative methods (interviews and email correspondences), which, while effective for exploring complex, context-specific issues, may not be generalizable to a larger population. Qualitative data offers rich insights into the experiences, perceptions, and challenges faced by firms but lacks the statistical power to draw broader conclusions. To complement and strengthen the findings, future research could integrate quantitative methods (such as surveys) to test the identified barriers and enablers of SSCM adoption on a larger scale. This mixed-methods approach could help increase the robustness and generalizability of the findings.

Conclusion

By recognizing these limitations, this study provides a solid foundation for future research into the adoption of sustainable supply chain management (SSCM). The insights offered here deepen our

understanding of the barriers and enablers firms face when pursuing sustainability in supply chains. At the same time, the identified limitations suggest avenues for future research that could address these gaps, further contributing to the field of SSCM.

6.3 Future research

The findings of this study open several avenues for future research. One potential direction is exploring the cyclical nature of barriers to sustainable supply chain management (SSCM). Future studies could investigate how financial constraints, resistance to change, and gaps in infrastructure interact over time. Understanding these cycles can inform strategies for breaking the delays in SSCM adoption, especially by identifying optimal timing for intervention.

Another area for further exploration is the role of leadership in SSCM adoption. Research could focus on how different leadership styles influence the timing and effectiveness of adopting sustainable practices. Specifically, investigating how leaders can reduce cultural resistance and drive the transition to sustainability could provide valuable insights into overcoming one of the key internal barriers identified in this study.

Long-term financial impacts also present an important area for future inquiry. While this study touched on initial financial barriers, longitudinal research could provide deeper insights into the long-term financial benefits of SSCM adoption, such as cost savings and improved operational efficiency. This could help alleviate concerns regarding the upfront investment required for sustainability initiatives.

Additionally, several more specific avenues for future research emerge based on the findings and limitations of this study. Cross-industry and cross-country comparisons could offer a more comprehensive understanding of the unique challenges and opportunities firms face when adopting SSCM across different sectors and regions. These comparative studies would highlight the varying contextual factors influencing adoption, thus contributing to a more nuanced understanding of the adoption process.

Quantitative studies also hold promise in complementing the qualitative insights provided here. Incorporating survey-based or data-driven methodologies could help gather broader, more generalizable insights from a larger sample of firms. Such studies would allow for hypothesis testing and contribute to a more comprehensive understanding of the factors influencing SSCM adoption on a larger scale.

Broader stakeholder engagement is another critical area for further research. Understanding the perspectives of various stakeholders—such as employees, customers, and suppliers—can shed light on their roles in the adoption process. Research could delve into how organizational culture and employee engagement affect internal resistance to change, and how firms can overcome these challenges to facilitate smoother transitions.

Post-adoption outcomes represent another crucial area for investigation. Future studies could explore the long-term benefits of SSCM adoption, including performance metrics such as cost savings, reduced environmental impact, and enhanced corporate reputation. A deeper understanding of these post-adoption outcomes would provide a fuller picture of the tangible benefits that firms can expect from implementing sustainable supply chain practices.

Finally, internal risks and complexities during SSCM adoption warrant further examination. Future research could explore the challenges firms face in terms of certification costs, supply chain disruptions, and the complexity of implementing sustainable practices. Understanding these risks more comprehensively would help firms better navigate the practical hurdles of adopting sustainability within their supply chains.

In conclusion, this study has significantly advanced our understanding of the factors influencing the adoption and timing of SSCM practices, providing both theoretical and practical contributions. By integrating insights from Institutional Theory and the Resource-Based View, the study offers a valuable framework for understanding the dynamics of SSCM adoption. Firms aiming to implement sustainable practices can leverage these findings to strategically address barriers and streamline the adoption process. However, as the field continues to evolve, future research should build on these insights to further explore the complexities of SSCM adoption, enhancing our understanding of this critical area for sustainable business practices.

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Appendices

Appendix 1 Semi-structure Interview Questions

- What is your role in the firm and more specifically towards the sustainability of the firm?
- When do you believe your first adopted/vowed to become more sustainable, what triggered the commitment to become more sustainable? What type of Internal and external influence drove the adoption of sustainable supply chain practices?
- What are the initiatives that were undertaken to fulfil your commitment to having a more sustainable supply chain practice? How do you selected and prioritise the initiatives undertaken?
- What type of challenges/barriers you face in becoming more sustainable?
- How do you feel about the type of your sustainable supply chain development? What areas do you believe you can become more sustainable in pursue for a more sustainable supply chain practice?
- What are some of the initiatives you plan on adopting but are facing some challenges and barriers/ how are you trying to resolve those challenges?
- Compared to the industry where do you feel your stands? What about other industries?
- Can you please describe in detail how you carry out any process you are involved in Reverse Logistics/ sustainable supply chain management?
- How do you believe your become more sustainable?
- Does the industry pressure you to become more/less sustainable?

Appendix 2- Sample of Initial Coding

Codes/Quotes

Pressure from associations in the industry

"Sky are being less aggressive about it, Sky is just looking for people to partner on solution but the,… there is an organisation called ERA, that is the Entertainment Retail Association, basically the UK the retail business selling home entertainment, they have basically written a fairly aggressive email to the industry saying we want you by 2020 to have fixed…umm…Your single use plastic (reads of an email) ''...eradicate the single use shrink wrap by 2020 and move to a sustainable packaging to tackle the causes that plastic waste and pollution '' in the scheme of things this is such a tiny part of (laugh) environmental damage that is getting done, One because we are the UK and don't put it in the sea, which is what happens in third world countries (.) and (..) um (.)part of my argument is, it's one thing coming to us and saying, form an entertainment point of view that fine we want to do our part, but what about all the other stuff you sell which all has plastic around it, make sure it is not just the you know an entertainment industry thing, it needs to be a long way beyond that."

"So, the reason I mentioned this is, yeah, certainly sustainability, plastics, recycling, it is massive, it got a massively high profile in the industry."

Pressure from customer driving sustainable practice

Referring to Sky introducing physical product + digital to its consumers

"…and what they have said then that they want to do an ocean rescue project, were by the product they send out to customers under the buyer to keep doesn't have any shrink wrap on it. Because that is the single use part of the whole product."

"…so, this have become a hot topic at the moment because… Sky are asking us to look into removing shrink wrap and now that Sky are asking to remove shrink wrap a lot of the retailers the traditional retailers are asking us to do the same. Now as you will see in this email there is lots of benefits and lots of disadvantages, as there is with anything, we do of course …aah…I'll find it (referring to the email)

Negative?? Influence from customers

Question: what hinders the idea of going digital straightaway?

“Retailers still want to sell it; customers still want to buy it and we still want to provide it. So, we are just not there yet. And I think, I mean that is a very good question, you only ask it behind closed doors to a degree…um because otherwise we are putting ourselves out of the job, and I think very often, there would become, there would be other economic reasons for why their still value to selling the disc product. Umm I guess”

Follow up question How would that put you of business, you will still be selling the content just in a different format?

“It would not put us out of business, you are absolutely right we would be, in fact we would be making more profits on virtual than we would do on physical, but it would put a lot of people out here, out of a job. It would certainly put me out of a job.”

Avoid Green Washing

“So, we’ve had a few calls on this, so we started to think about the consequences of not having any protective cellophane around it, there is also the reality of, if we take it off and we throw it away and then sky sends it out to say it doesn’t have any…plastic around it…it’s a lie really... because it did have once… and we’d just have to get rid of it…umm and dispose of it.”

Sustainable practices

“… what you will see tomorrow when you go to [redacted] (recycling contractor), is the fact that all our product goes into this big machine and gets separated, so the shrink wrap material goes off into one bag, that takes a long time to fill up before it gets sent to be recycled, in fact these are not being recycled they are being reused, and there is a difference between being recycled and reuse. What you will see tomorrow is mostly reuse, so what Mike and his team do is sell… the three different grades I think there are of plastic… umm and McAdam who make tarmac…make the roads they buy a lot of this product, and they can’t get enough of it now apparently.”

“…the paper components just go to paper pulping …umm…every selling bet gets reused basically, so, that’s good…”

Industry collaboration

"…we are in the early stages I think is fair to say of working with them on a solution to remove the single use packaging and the problem with that is and I'm happy to share with you an email that I got…umm on this topic…

Sky are asking us to look into removing shrink wrap and now that Sky are asking to remove shrink wrap a lot of the retailers the traditional retailers are asking us to do the same."

No alternative sustainable option for physical product/ Challenges

"…not ideal to remove the shrink wrap, because the disc case will get damaged, that is one of the big issues that we have..."

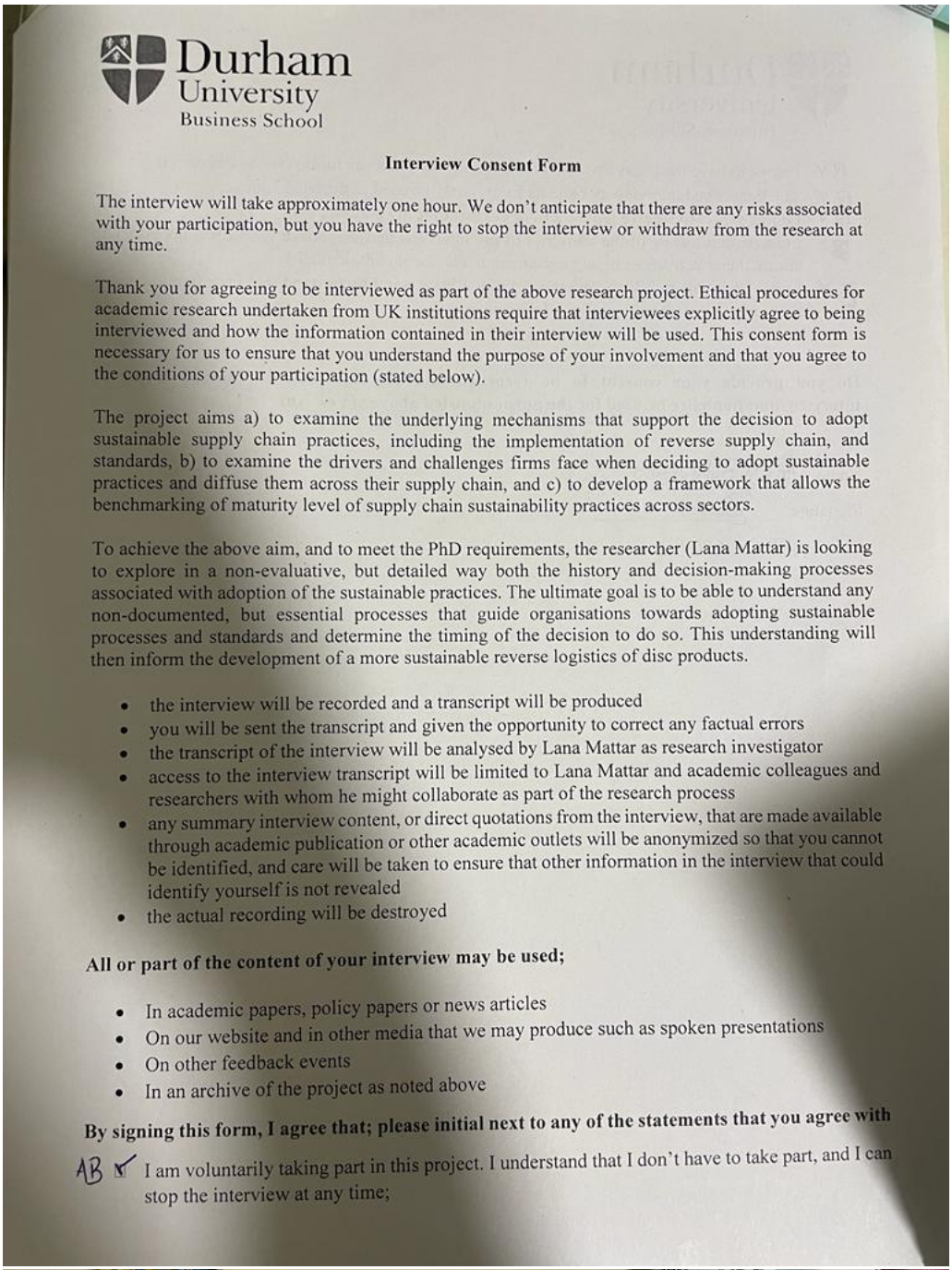
"…we started to think about the consequences of not having any protective cellophane around it, there is also the reality of, if we take it off and we throw it away and then sky

Appendix 3 Transcription sample

Interview with [redacted]
Audio: WhatsApp Audio 2018-10-22 at 9.54.12 PM.mpeg
Project briefing and consent forms were read and signed prior to recording

Interviewer: I'm interviewing [redacted] and we are talking about the facts and figures of sustainable disc products and the recycling process of the discs and its parts?
Simon: Yeah!
Simon: So, I just mentioned I received this form the environment exchange, I bet you don't know who these people are, but I think this has come out of... I think the reason we got this document it come through the post… it's because we submit once a year our recyclable materials returns… we basically have to give them returns number and things based on … umm on how much of the packaging whether its packing for this product has come from manufacturing, and how much of that is sustainable and recyclable, um or recyclable all of this information comes from [redacted] who are with tomorrow, so maybe you would get some information from Arun when you see him. Particularly Just to say where does this information come from how do you monitor it…extra… extra But I'll do, I will do photocopies of this for you, so you have got all the words. You may even want to reach out and make contact with these people if you need more information,
Lana: yes, I will. Thank you
Simon: It's a pretty thrall document. (Mumbles something) … This one of things is very high, it is massive in the media at the moment you've seen all programs (mumble)…plastic in the oceans… One of our key customers is sky, and sky is an interesting customer because they are digital customer, because they sell set boxes which is all digital, but for home entertainment products and movies particularly when they put them on SKY movies they started buy to keep! I don't know if you are a Sky customer, are you?
Lana: No, I'm not
Simon: Okay so Virgin do the same as well, so basically to encourage or to sustain collectability of home entertainment … so to get to keep people of having shelves full of DVDs, Sky decided to start offering physical product when people purchase a digital file onto their set top box or on to their Skybox. I think this actually came out of there being a number of issues with iTunes, where people would have a selection of iTunes music that they paid for but technically didn't really own anything, they didn't own the rights to any of that material that was sitting on their iPod. This is going back a few years, there was a number very high profile cases, where it was being discussed quite a lot, I won't go into the details and the findings of each one, but I think it led sky to think, right we need to promote ownership here, and to not just say, oh well you have got the digital file forever on your box, because in reality you may not have the box forever, you may not be a sky customer forever, you might go over to virgin and you can't take those movies over to virgin, this is why they introduced the buy to keep. From a commercial point of view, it is actually not

Appendix 4 Consent Form Sample



Durham University
Business School

Interview Consent Form

The interview will take approximately one hour. We don't anticipate that there are any risks associated with your participation, but you have the right to stop the interview or withdraw from the research at any time.

Thank you for agreeing to be interviewed as part of the above research project. Ethical procedures for academic research undertaken from UK institutions require that interviewees explicitly agree to being interviewed and how the information contained in their interview will be used. This consent form is necessary for us to ensure that you understand the purpose of your involvement and that you agree to the conditions of your participation (stated below).

The project aims a) to examine the underlying mechanisms that support the decision to adopt sustainable supply chain practices, including the implementation of reverse supply chain, and standards, b) to examine the drivers and challenges firms face when deciding to adopt sustainable practices and diffuse them across their supply chain, and c) to develop a framework that allows the benchmarking of maturity level of supply chain sustainability practices across sectors.

To achieve the above aim, and to meet the PhD requirements, the researcher (Lana Mattar) is looking to explore in a non-evaluative, but detailed way both the history and decision-making processes associated with adoption of the sustainable practices. The ultimate goal is to be able to understand any non-documented, but essential processes that guide organisations towards adopting sustainable processes and standards and determine the timing of the decision to do so. This understanding will then inform the development of a more sustainable reverse logistics of disc products.

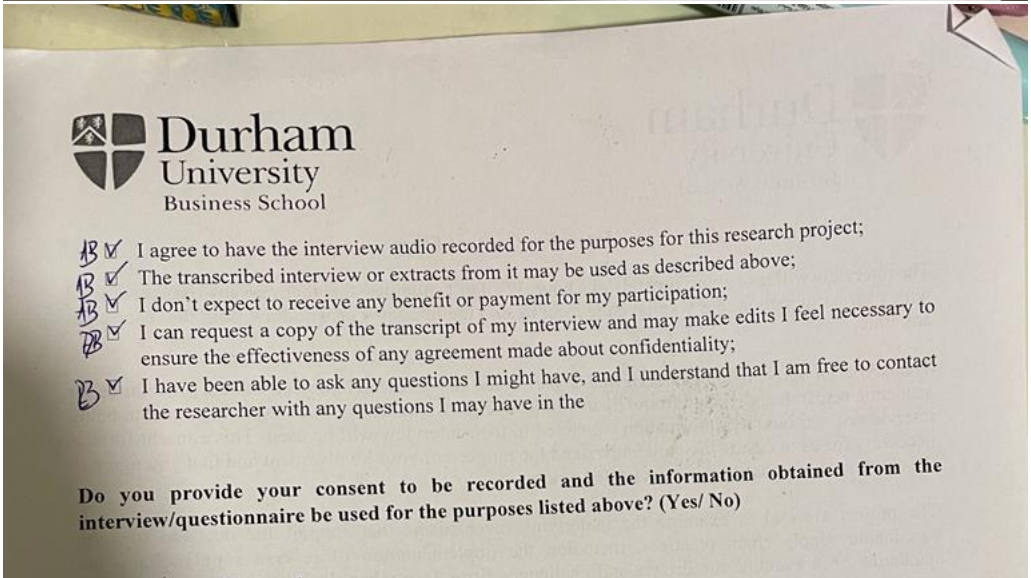
- the interview will be recorded and a transcript will be produced
- you will be sent the transcript and given the opportunity to correct any factual errors
- the transcript of the interview will be analysed by Lana Mattar as research investigator
- access to the interview transcript will be limited to Lana Mattar and academic colleagues and researchers with whom he might collaborate as part of the research process
- any summary interview content, or direct quotations from the interview, that are made available through academic publication or other academic outlets will be anonymized so that you cannot be identified, and care will be taken to ensure that other information in the interview that could identify yourself is not revealed
- the actual recording will be destroyed

All or part of the content of your interview may be used;

- In academic papers, policy papers or news articles
- On our website and in other media that we may produce such as spoken presentations
- On other feedback events
- In an archive of the project as noted above

By signing this form, I agree that; please initial next to any of the statements that you agree with

AB ✓ I am voluntarily taking part in this project. I understand that I don't have to take part, and I can stop the interview at any time;



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AB ✓ I agree to have the interview audio recorded for the purposes for this research project;
AB ✓ The transcribed interview or extracts from it may be used as described above;
AB ✓ I don't expect to receive any benefit or payment for my participation;
AB ✓ I can request a copy of the transcript of my interview and may make edits I feel necessary to ensure the effectiveness of any agreement made about confidentiality;
AB ✓ I have been able to ask any questions I might have, and I understand that I am free to contact the researcher with any questions I may have in the

Do you provide your consent to be recorded and the information obtained from the interview/questionnaire be used for the purposes listed above? (Yes/ No)

Appendix 5 Ethical Form

Title of Project: ……Sustainable supply chain practices-motives drivers and challenges……..

Name of Principal Researcher or Student: .Lana Mattar……