UNIVERSIDADE FEDERAL DE SÃO CARLOS (UFSCar)

CENTRO DE CIÊNCIAS EXATAS E DE TECNOLOGIA (CCET)

PROGRAMA DE PÓS-GRADUAÇÃO EM ENGENHARIA DE PRODUÇÃO (PPGEP)

MAICOM SERGIO BRANDÃO

The coopetitive effect in supply chains:

exploring the relationship between multiple supply chains from the focal agent perspective

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Thesis presented to the graduate program in Production Engineering of the Federal University of São Carlos, as part of the requirements for obtaining the PhD degree in Production Engineering

Supervisor: Prof. Dr. Moacir Godinho Filho

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Dedico aos que fizeram parte desse processo.
Aos que partiram, aos que permaneceram e a quem recentemente chegou.

RESUMO

Esta tese parte da possibilidade de uma forma de interação entre cadeias de suprimentos denominada coopetição, isto é, a combinação entre cooperação e competição. Com isso, persegue o seguinte objetivo geral: Explorar a coopetição entre múltiplas cadeias de suprimentos de uma organização a partir do relativismo da cadeia de suprimentos e suas implicações. Organizado em seis artigos, este estudo se desmembra em duas principais áreas de investigação: a perspectiva de múltiplas cadeias de suprimentos – que resultou no enquadramento teórico adotado – e a coopetição – que fornece os conceitos básicos utilizados na pesquisa. Como resultado de uma primeira revisão sistemática, a tese destaca a importância da ideia de fluxo como um conceito fundamental na compreensão do relativismo das cadeias de abastecimento, com ênfase especial na interação entre fluxos materiais, financeiros e de informações. Além disso, por meio de uma articulação teórica, formaliza a perspectiva de múltiplas cadeias de abastecimento como uma perspectiva alternativa à caracterização convencional de elos e ligações e destacando a natureza multifacetada do fenômeno da cadeia de suprimentos. Ainda nessa vertente, apresenta a perspectiva de múltiplas cadeias de suprimentos como parte do discurso organizacional por meio da análise de relatórios de sustentabilidade. Baseando-se em evidências empíricas e na literatura, a tese estabelece um quadro teórico para investigar a coopetição entre múltiplas cadeias de abastecimento. Por meio de uma segunda revisão sistemática da literatura, verifica-se que, para o contexto inter-organizacional, existem várias formas de coopetição - baseada na tecnologia, relacionamento e canal - associadas a diferentes cadeias de suprimentos. A partir de um estudo de múltiplos casos, observa-se como os mecanismos de gestão e componentes relacionais ocorrem ente múltiplas cadeias de suprimentos bem como suas similaridades e diferenças em relação à coopetição inter-organizacional. Finalmente, a partir de um estudo de caso retrospectivo, a presente tese observa como a mudança na estrutura organizacional é capaz de evidenciar as distintas cadeias de suprimentos da organização e mover as dinâmicas coopetitivas ao longo do contínuo da coopetição. O efeito coopetitivo que nomeia essa tese corresponde à interação fundada num contexto cooperativo que ocorre entre múltiplas cadeias de abastecimento dentro de uma organização – delimitadas, socializadas e geridas por um grupo de atores – em que a escassez de recursos internos pode levar à competição entre elas. As implicações dessa interação podem afetar não somente a empresa focal, mas outros elos da cadeia de suprimentos de forma positiva ou negativa. Como contribuições, esse estudo propõe que as variantes do termo da cadeia de suprimentos sejam observadas como representantes da evolução do campo de pesquisa a partir dos conceitos principais de fenômeno, orientação e gestão da cadeia de suprimentos. Considerando a coopetição, amplia o rol de níveis de análise para incluir a coopetição entre múltiplas cadeias de suprimentos. Além disso, a tese contribui para a compreensão gerencial ao propor estratégias para navegar de forma eficaz nas dinâmicas coopetitivas. Ele enfatiza a importância de identificar cadeias de abastecimento core e não-core, gerenciar assimetrias de poder entre elas e reconhecer o papel da estrutura organizacional na formação de interações coopetitivas. Além disso, destaca a importância de elementos mediadores que sejam capazes de capturar a criação de valor global e individual das múltiplas cadeias de abastecimento. Também, a necessidade de diferenciar a coopetição de uma restrição de abastecimento simples por conta de sua característica relacional e assim evitar que a tensões e conflitos encontrem respaldo somente da confiança entre os atores para que possam ser gerenciados.

Palavras-chaves: Cadeia de suprimentos. Terminologia. Coopetição. Múltiplas cadeias de suprimentos. Revisão Sistemática da Literatura. Estudo de caso.

ABSTRACT

This thesis explores the possibility of a form of interaction between supply chains known as coopetition, which combines cooperation and competition. The main objective is to investigate coopetition among multiple supply chains within an organization from the perspective of supply chain relativism and its implications. This study, organized into six articles, unfolds into two primary streams of inquiry: the perspective of multiple supply chains - resulting in the theoretical framework of the research - and coopetition - providing the basic concepts used in the study. Through a first systematic review, the thesis underscores the significance of the idea of flow as a fundamental concept in understanding the relativism of supply chains, with a particular emphasis on the interaction among material, financial, and information flows. Furthermore, it formalizes the perspective of multiple supply chains as an alternative to the conventional characterization of nodes and links, highlighting the multifaceted nature of supply chain phenomena. Within this vein, it presents the perspective of multiple supply chains as part of organizational discourse from sustainability reports. Besides, the thesis establishes a theoretical framework to investigate coopetition among multiple supply chains. Through a second systematic literature review, it is found that, within the inter-organizational context, there exist various forms of coopetition (technology-based, relationship-based, and channel-based) associated with different supply chains. Through a multiple case study, the execution and cooperative interaction among multiple supply chains are observed, and their similarities and differences concerning inter-organizational coopetition are listed. Finally, through a retrospective case study, it observes how changes in organizational structure can foster the emergence of the distinct supply chains of the organization and shift coopetitive dynamics along the coopetition continuum. The coopetitive effect addressed in this thesis corresponds to interaction founded on a cooperative context occurring among multiple supply chains within an organization - delimited, socialized, and managed by a group of actors - where internal resource scarcity may lead to competition among them. The implications of this interaction can affect not only the focal company but also other links in the supply chain positively or negatively. As contributions, this study proposes that variants of the supply chain term be observed as representatives of the evolution of the research field from the main concepts of phenomenon, orientation, and supply chain management. Considering coopetition, expands the scope of analysis levels to include coopetition among multiple supply chains. Furthermore, the thesis contributes to managerial understanding by proposing strategies to effectively navigate coopetitive dynamics. It emphasizes the importance of identifying core and non-core supply chains, managing power asymmetries among them, and recognizing the role of organizational structure in shaping coopetitive interactions. Additionally, it highlights the importance of mediating elements capable of capturing the global and individual value creation of multiple supply chains. It also underscores the need to differentiate coopetition from a mere supply constraint due to its relational characteristic, thus avoiding tensions and conflicts solely relying on trust among actors to be solved.

Keywords: Supply Chain. Terminology. Coopetition. Multiple supply chains. Systematic Literature Review. Case study.

LIST OF FIGURES

LIST OF TABLES

TABLE OF CONTENTS

1 INTRODUCTION

1.1 Problematization and research questions

The concept of supply chain management gained popularity from the late 1990s to the early 2000s with the publication of studies from The Global Supply Chain Forum (GSCF) (LAMBERT; COOPER; PAGH, 1998; LAMBERT; COOPER, 2000; CROXTON et al., 2001). These studies argued that optimizing a set of functional processes was insufficient if they remained isolated both intra- and inter-organizationally. Consequently, integration, coordination, and collaboration began to be perceived as critical concepts for this emerging discipline.

Simultaneously, the business world was progressing towards globalization. Cohen and Mallik (1997) highlighted that large multinational companies began restructuring their production and sales bases from regional to global. Companies such as Ford and Whirlpool Corporation started to develop, produce, and market their products through a global operational framework - essentially, via global supply chains. Thus, supply chain management gained even greater prominence, and is regarded as a source of competitive advantage for companies within this new operational paradigm (OLAVARRIETA; ELLINGER, 1997; GLIGOR et al., 2018).

Consequently, concerns about organizing knowledge within this topic started to become evident, leading to discussions aiming to reach a consensus on the definition of what constituted a supply chain. Mentzer et al.'s (2001) study gained popularity within this effort, introducing three central elements for discussion: the supply chain as an organizational phenomenon, supply chain orientation, and supply chain management itself.

However, even after decades, reaching a consensus or understanding of the nature of the supply chain and its management remains an ongoing debate in the literature (CARTER; ROGERS; CHOI, 2015; LEMAY et al., 2017). Indeed, the Council of Supply Chain Management Professionals (CSCMP) acknowledges the difficulty in precisely defining the concept of the supply chain, considering its dynamic nature and the breadth of associated disciplines. Moreover, over the years, variations have been elaborated upon from the term "supply chain," despite the lack of a consensus on the basic concept of supply chain management. It can be assumed that the evolution of the discipline partly stemmed from multiple understandings of this seminal concept. For instance, there are

variations such as lean supply chains (e.g., LAMMING, 1996; ANAND; KODALI, 2008; GATTORNA, 2006; SANTA-EULALIA et al., 2011), agile supply chains (CHRISTOPHER, 2000; CHRISTOPHER; TOWILL, 2001; GATTORNA, 2006), lean-agile (e.g., MASON-JONES; NAYLOR; TOWILL, 2000), green supply chains (e.g., BEAMON, 1999; KLASSEN; JOHNSON, 2004; SANTA-EULALIA et al., 2011), sustainable supply chains (e.g., LINTON; KLASSEN; JAYARAMAN, 2007; O'ROURKE, 2014), luxury supply chains (e.g., BRUN et al., 2008; BRANDÃO; GODINHO-FILHO; LAGO, 2021), automotive supply chains (e.g., CHARAN; SHANKAR; BAISYA, 2009; OLUGU; WONG; SHAHAROUN, 2010; VANALLE et al., 2017), among others.

Understanding some of these variations may be explained by a concept recently introduced by Carter, Rogers and Choi (2015) – that of supply chain relativism. According to the authors, a fundamental premise of the supply chain lies in its relativity to a product or agent that views it within limited scope. Thus, the connection between relativism concepts and the supply chain implies that the phenomenon itself may involve a degree of subjectivity.

However, the supply chain has predominantly been studied within the positivist and post-positivist paradigms, within which there is an expectation for a certain formalization in terms of concepts and a degree of distance and impartiality (BURGESS; SINGH; KOROGLU, 2006; MARTINS, 2012). Examples such as the case of BAT (2019), which distinguishes between its leaf and non-leaf supply chains, highlight this relative attribute of the supply chain in practical use. Hence, part of the difficulty in achieving consensus on a definition might arise precisely from this relative and subjective characteristic of the phenomenon, which becomes increasingly evident in both theory and practice.

This work stems from this point, i.e., from the association between relativism and the supply chain, to explore a set of theoretical and practical implications from this perspective, detailed subsequently. Therefore, the chosen epistemological stance in this study predominantly aligns with positivism, which is the prevailing paradigm requiring a foundational basis and engagement within the dominant academic community while recognizing interpretivism as a potential source for constructing knowledge in the discipline (LIN, 1998).

However, by delimiting the relativism of the supply chain to the product-agent, Carter, Rogers and Choi (2015) do not consider other variations involving the term "supply chain" or alternatives (e.g., management and orientation), for example, variations such as sustainable supply chains, blockchain-based, or even multichannel move away from the product-agent axis. Therefore, understanding the other relativisms of the supply chain from the language constructs that configure the uses of the term remains an open question.

Thus, the initial questions of this thesis are posed:

RQ01: How has the terminology related to supply chains been tailored to suit various contexts and applications, and what are the implications of this tailoring for the field of supply chain management?

Tailoring, as adopted in this context, is a choice that reflects the application of the concept of relativism to modifications employed in using the term "supply chain." This linguistic variation, extending beyond a mere choice of words, signifies a deeper and more contextualized approach to supply chain management. By adopting terms such as 'sustainable,' 'agile,' 'lean,' among others, the literature not only introduces specific nuances to the subject but also unveils how supply chain practices and theories are shaped and developed over time. Exploring these customizations offers a richer understanding of how the supply chain is perceived and managed in different contexts, as well as how these adaptations influence the evolution of the discipline.

The relativism within the supply chain interferes with the way the supply chain is characterized, involving the depiction of the concept through supply chain mapping. The traditional characterization of the supply chain is depicted by a group of authors (LAMBERT; COOPER; PAGH, 1998; LAMBERT; COOPER, 2000; CROXTON et al., 2001; LAMBERT and ENZ, 2017) who describe it as a set of links and connections. In this representation, the nodes assume the role of actors - or agents - of the supply chain, while the links are the paths through which flows associated with the supply chains travel (CARTER; ROGERS; CHOI, 2015).

However, this particular way of representing the supply chain has solidified a perspective of understanding supply chain management essentially linked to the company as the primary unit of inter-organizational interaction, rather than focusing on the flows associated with supply chains, despite the presence of the concept of flow within numerous definitions in the literature (e.g., LUMMUS; ALBER, 1997; MENTZER et al., 2001; STOCK; BOYER, 2009).

Thus, the node, symbolizing a company, is seen as “closed”, and research interest begins with the flows entering and leaving the organization rather than what occurs within the node itself. Carter, Meschnig and Kaufmann's study (2015) noted that the supply chain needs to be studied as a multi-level phenomenon, not solely from the perspective of the company as a closed node, as confining it to a single level would mean missing opportunities to explore real-world problems using supply chain concepts. In other words, limiting the study solely to the "closed node" perspective prevents the exploration of supply chain phenomena in the real world due to the inherent limitations in characterizing the supply chain.

Moreover, there are other ways of describing the supply chain phenomenon. For instance, Gattorna (2006) highlights that organizations typically operate numerous value chains that exhibit more chaotic behavior than orderly processes. He illustrates this phenomenon by comparing them to "an electrified plate of spaghetti" rather than well-organized conveyor belts (p.6). This depiction suggests that solely perceiving the supply chain as a "closed node" overlooks the complexities within organizations managing these diverse supply chains, as emphasized by Gattorna (2006).

Nevertheless, these different viewpoints regarding the supply chain have not received extensive scrutiny within the existing body of literature. The prevalent focus remains on the notion of a closed node, centered on companies rather than the intricate flows themselves. Even Gattorna's (2006) observations of multiple supply chains primarily lead to proposed management strategies rather than a deeper consideration of how multiple supply chains impact knowledge construction within the field. Other studies, such as Simchi-Levi (2010) and Ohmori et al. (2021), also identify the existence of multiple supply chains. Even supply chain differentiation (e.g., HILLETOFTH, 2012) touches upon this idea. Nevertheless, it advances more on the prescriptive side without initially reflecting on the potential implications of this perspective for the supply chain.

Studying the supply chain from this perspective, from the perspective of the organization improve understanding of the reality and complexity of organizations, as mentioned by Carter, Meschnig and Kaufmann (2015). For instance, considering the same reference companies mentioned by Lambert and Enz (2017) in their paper, such as Unilever, how many supply chains could one imagine within this multinational that not only has a global presence but also numerous brands and business units each distinct enough to be seen as separate supply chains? Would this not be another form of simplification, limiting the advancement in understanding the supply chain itself, as noted by Carter, Rogers and Choi (2015)? From this reflection, the thesis establishes the second research question:

RQ02: How to conceptualize the perspective of multiple supply chains considering both theoretical frameworks and practical applications?

On the other hand, a second aspect resulting from the relativism of the supply chain refers to how these supply chains interact with each other. From this perspective, as suggested by Gattorna (2006), the supply chains of an organization are more than well-ordered flows; they are interrelated. The concept of relationships, both inter- and intraorganizational, is pivotal in supply chain management, as noted by Burgess, Singh and Koroglu (2006) after a systematic review of supply chain management concepts.

In general, the literature expects these relationships to be cooperative—engaging in the joint pursuit of objectives aligned with the supply chain that supports organizational strategy (BOZARTH; HANDFIELD; WEISS, 2008; CHOPRA; MEINDL, 2011; WILHELM, 2011; LI; LIU; LIU, 2011). Unfolding strategy through process alignment, resource sharing, and interaction frequency could encourage cooperation within the supply chain (KOVACS; SPENS, 2010).

However, even within the same organization, cooperation does not solely prevail. According to various authors, organizations can also be viewed as arenas for micro-organizational disputes among political agents seeking to advance their agendas and strategies to gain more resources (BIRKINSHAW; LINGBLAD, 2005; ALCADIPANI;

HASSARD, 2010; BOLMAN; DEAL, 2017). This dynamic may not indicate permanent cooperation; instead, it suggests the possibility of competition, as highlighted by Flingstein (1993) and Birkinshaw and Lindblad (2005).

Thus, considering these two facets within an organization, it becomes reasonable to assume the coexistence of competition and cooperation within the context of supply chain management at the intraorganizational level. This possibility leads us to the concept of "coopetition" as a potential form of relationship to be observed internally among multiple supply chains.

Coopetition can be classified in various ways within the literature—sometimes as a phenomenon, strategy, or relationship. The purpose of this study is to explore this topic from the perspective of relationships. Therefore, the focus on coopetition in this thesis will be on the relationship aspect, encompassing both cooperation and competition (BENGTSSON; KOCK, 2014; DORN; SCHWEIGER; ALBERS, 2016). Being paradoxical in nature, it also results in tensions and requires specific mechanisms for management to avoid associated risks such as opportunism (CRICK, 2019; CRICK; CRICK, 2021).

Although coopetition was initially conceptualized as a business strategy for inter-organizational contexts (BENGTSSON ; KOCK, 2014; BOUNCKEN ET AL., 2015; BENGTSSON ; RAZA-ULLAH, 2016; DORN, SCHWEIGER ; ALBERS, 2016; GERNSHEIMER, KANBACH ; GAST, 2021), it has been studied within organizations, leading to intraorganizational research. Nevertheless, comparing the theoretical framework—i.e., concepts, dynamics, and implications—of this type of coopetition with that of inter-organizational coopetition remains a subject of debate.

Consequently, research interest in intraorganizational coopetition has grown within organizations in various contexts: among workgroups (LIN ET AL., 2010; BARUCH; LIN, 2012; GHOBADI; D'AMBRA, 2012A; GHOBADI ; D'AMBRA, 2012B; GHOBADI; D′AMBRA, 2013; GHOBADI; CAMPBELL; CLEGG, 2017), business units (TSAI, 2002; LUO, 2005; SERAN; PELLEGRIN-BOUCHER; GURAU, 2016; SONG; LEE; KHANNA, 2016), and even among brands (CHIAMBARETTO, GURĂU; LE ROY, 2016; DEPEYRE; RIGAUD; SERAIDARIAN, 2018; CHIAMBARETTO; MASSÉ; MIRC, 2019). In the supply chain field, coopetition can also be seen within organizations (AMATA et al., 2021).

Thus, further evidence is necessary through theoretical and empirical investigations to determine whether this research stream is sufficiently autonomous to generate its own body of knowledge, somewhat detached from inter-organizational coopetition (CHIAMBARETTO; FERNANDEZ; LE ROY, 2022). From this, the third and fourth questions of this thesis are formulated:

RQ03: What concepts and theoretical structures have been used to study coopetition within the literature? How does coopetition occur in supply chains through drivers, practices and outcomes?

RQ04: How does coopetition occur among multiple supply chains considering the intraorganizational context?

Consequently, this thesis adopts the concept of supply chain relativism formulated by Carter, Rogers and Choi (2015) to explore the implications of this idea in characterizing supply chains and how they interact, considering interaction as a central concept for the discipline and its characterization. Through the observation of a phenomenon, concepts within the coopetition topic are employed to explain the antecedents, dynamics, and potential outcomes arising from their articulation.

1.2 Thesis Objectives

Drawing upon the presented context, the following main and specific research objectives are established:

Main Objective: To explore the coopetition among supply chains within an organization from the relative perspective of the supply chain and its implications.

Specific objectives:

1. Identify the sources from which concepts associated with supply chains are modified within the literature;
2. Conceptualize the perspective of multiple supply chains and illustrate it through practical examples;

3. Map the concepts associated with the topic of coopetition within the literature;
4. Analyze the concepts involved in coopetition among multiple supply chains; and
5. Relate the concepts involved in coopetition among multiple supply chains in a theoretical model.

1.3 Overview of Thesis Structure

Figure 1.1 illustrates the thesis structure. Table 1.1 summarizes the studies conducted to compose the thesis and their associated contributions. Additionally, it describes how the thesis is organized in terms of chapters.

Figure 1.1 – Thesis structure

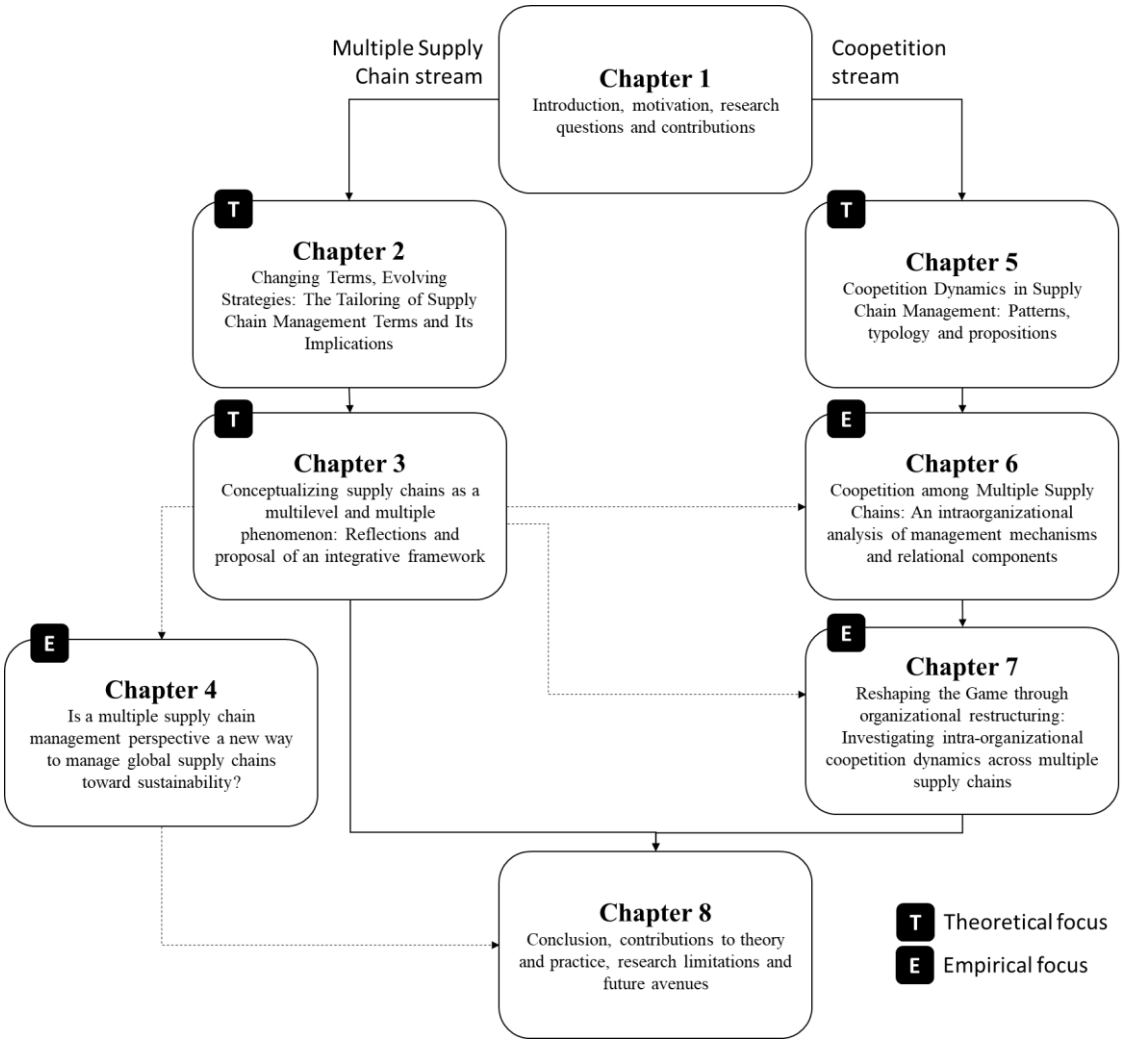

Table 1.1 – Specific objectives and research methods

RQ	Specific objectives	Chapter	Research Method
Q01	Identify the sources from which concepts associated with supply chains are modified within the literature.	Chapter 2	Systematic Literature Review (SLR)
Q02	Conceptualize the perspective of multiple supply chains and illustrate it through practical examples	Chapter 3 and 4	Conceptual and multi-method: SLR, Content analysis of sustainability reports
Q03	Map the concepts associated with the topic of coopetition within the literature	Chapter 5	Systematic Literature Review (SLR)
Q04	Analyze the concepts involved in the coopetition among multiple supply chains	Chapter 6	Multiple case study
Q04	Relate the concepts involved in coopetition among multiple supply chains in a theoretical model	Chapter 7	Case Study

As depicted in Figure 1.1 and Table 1.1, the thesis framework is structured around distinct articles categorized into two primary streams of contributions: theoretical and empirical. Chapter 2 extensively explores the concept of relativism within supply chain-associated terminology, employing a systematic literature review and lexical analysis. This chapter elucidates that supply chain-related terms manifest in the literature through three key references: product-agent, performance goal-oriented, and supply chain structure.

One significant implication of this conceptual framework is the correlation between product-agent relativism and the concept of the supply chain phenomenon, laying the groundwork for both supply chain orientation and the overarching management of supply chains. Subsequently, Chapter 3 introduces advancements within the perspective referred to as multiple supply chains, identified as a consequential implication of supply chain relativism.

Chapter 3 is structured as a theoretical essay aimed at analyzing various approaches to characterizing the supply chain. It introduces three distinct perspectives:

the closed-node perspective, the multilevel perspective, and the multiple supply chains perspective. Ultimately, these perspectives are found to be interconnected, suggesting a sense of complementarity rather than exclusivity among them. This article contributes to advancing theoretical discourse, drawing from Gattorna's (2006) observation that organizations encompass multiple value chains—a concept acknowledged but not extensively explored in its implications for the supply chain phenomenon.

Expanding on these insights, Chapter 4 seeks practical examples that illustrate the concept of multiple supply chains. This chapter describes a multi-method study designed to uncover the diverse and interconnected nature of the supply chain as evident in organizational discourses. Essentially, it strengthens the foundational theories introduced in Chapters 2 and 3, specifically concentrating on the interconnected and diverse facets of the supply chain.

The other aspect of the thesis aims to comprehend the dynamics of interactions among multiple supply chains and their potential implications for organizations, contributing to the advancement of the concept of relativism. Beginning with an exploration of coopetition as a type of interaction, Chapter 5 undertook a systematic literature review. This review highlighted that coopetition primarily involves inter-organizational relationships within supply chain management. It also identified key concepts and theoretical frameworks used for studying this theme, focusing on drivers/antecedents, practices, and outcomes. Thus, the systematic literature review helped advance the analysis of coopetitive relationships among multiple supply chains, the subject of Chapter 6.

Chapter 6 explores the empirical investigation of intraorganizational coopetition among multiple supply chains for three companies. Based on a multiple case study, the dimensions and themes of coopetition within the framework of multiple supply chains and intraorganizational levels were identified. Additionally, this study enabled the comparison of similarities and differences between inter- and intraorganizational coopetition for supply chain management regarding management mechanisms and relational components. The concept of core and non-core supply chains emerged across the three cases studied, resulting in a promising concept for future research. Furthermore, viewing coopetition as a relationship rather than just a strategy prevailed in the cases.

Chapter 7 encompasses the retrospective case study conducted within this thesis, which is more closely aligned with the primary objective of investigating the coopetitive impact among an organization's supply chains from the perspective of supply chain relativity and its implications. Through an examination of an organizational phenomenon related to the supply chain concept, a retrospective case study identified distinct instances within the organization where changes occurred in the management of multiple supply chains.

Using coopetition concepts and supported by theoretical frameworks such as resource-based theory and transaction costs, these changes were analyzed. The observations indicated that coopetition could potentially lead to varying impacts on supply chains: some might see improvements in financial and operational performance, while others could face discontinuation, posing strategic challenges in how products are positioned within the market. Finally, Chapter 8 wraps up the thesis by summarizing findings from different articles, highlighting their limitations, and suggesting paths for future studies.

1.4 Ontological and epistemological assumptions

The suggestion to include a section dedicated to declaring the researcher's ontological and epistemological stance arose during one of qualifying exams, which are part of the thesis approval process. However, this reflection proves relevant due to the paths and decisions adopted throughout the construction of the texts that revolve around the presented thesis.

Before declaring the onto-epistemological position adopted in this research, it is worth highlighting the study by Burgess et al. (2006), which, in evaluating the characteristics of the field of supply chain management, notes the prevalence of the positivist paradigm in studies. According to the authors, this prevalence may result from the adoption of theories and learnings from business schools. In fact, when suggesting how research within the field is organized, the authors, adopting a Lakatosian approach, position positivism as one of the constitutive elements of the discipline's hard core.

However, one of the central elements of my concern lies in the idea of the supply chain as a socially constructed concept by actors immersed in the organizational environment. At this point, there appears to be a tension between a research tradition that, from the positivist epistemological paradigm, calls for the objectivism of the supply chain definition (onto-epistemological alignment), and, on the other hand, the existence of a central concept whose consensus in usage has not been achieved since its popularization (MENTZER et al., 2001; BURGESS et al., 2006; LEMAY et al., 2017). To me, this seems to indicate a constructivist nature aligned with interpretivism (in reference to the alignment presented by Bryman, 2012).

The idea of the supply chain is constituted through social construction and language, from which its management derives – and on this point, I build the perspective of multiple supply chains. Despite this, I adhere to positivism-objectivism as the dominant paradigm for pragmatic reasons. This does not eliminate occasional constructivist-interpretivist reflections during the development and construction of knowledge in the thesis. In empirical studies on coopetition that adopt a qualitative approach, this combination is more prevalent (LIN, 1998).

2 CHANGING TERMS, EVOLVING STRATEGIES: THE TAILORING OF SUPPLY CHAIN MANAGEMENT TERMS AND ITS IMPLICATIONS

Research Paper 1: Systematic Literature Review

The multiple supply chain perspective stream

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Note for the reader: In this article, I invite you to delve into the various uses of the term "supply chain" as it has been shaped in the literature. Through the systematic review and analysis employed, it is possible to understand that the basis of supply chain relativism has its origins in organizational flows. Understanding these flows is crucial to grasping the essence of an organization, rooted in the fundamental concepts of our discipline.

Abstract

Purpose – This study aims to investigate the evolution of terminology in supply chain management (SCM) and its implications for the field's strategic orientation. It also aims to understand how SCM terms adapt to interdisciplinary contexts, reflecting shifts in theoretical and practical approaches within the discipline. **Design/methodology/approach** – This study uses a systematic literature review and analyzes over 3,500 unique SCM-related terms extracted from approximately 33,000 abstracts. Using Descending Hierarchical Classification and factor analysis, the research methodologically identifies key shifts in terminology and discerns underlying patterns. **Findings** – This study categorizes terminological variations in SCM into three main clusters: product–agent, performance objective orientation and structure. These variations signal not just linguistic changes but strategic shifts in SCM understanding and practice. Notably, terms such as "green," "sustainable" and "circular" supply chains have emerged in response to evolving internal and external pressures and trends. Besides, this paper offers a nuanced understanding of these terminological adaptations, proposing a reference framework for navigating SCM's evolving lexicon and highlighting global usage and

geographical and cultural nuances in SCM discourse. **Research limitations/implications** – This paper presents a reference framework that complements existing SCM definitions, fostering a shared understanding of SCM variations on a global scale. This framework enhances cultural sensitivity within the field and underscores SCM's adaptability and flexibility. These insights offer a nuanced view of SCM dynamics, benefiting researchers and practitioners alike. Beyond terminology, this study sheds light on the interplay between language and SCM strategy, providing a valuable perspective for navigating the evolving SCM landscape. The study's scope is constrained by the analyzed abstracts. Future research could broaden this analysis to encompass more SCM literature or delve deeper into the implications of terminological changes. **Practical implications** – This study offers practitioners a reference framework to navigate the evolving lexicon of SCM. This framework aids in understanding the strategic implications of terminological changes, enhancing clarity and context in both academic and practical applications. **Social implications** – By acknowledging global usage and variations, the research underscores the impact of geographical and cultural nuances on SCM discourse. This global perspective enriches the understanding of SCM as a dynamic and culturally sensitive field. **Originality/value** – This research is novel in its extensive and systematic exploration of SCM terminology. It offers a comprehensive analysis of how language evolves in tandem with strategic shifts in the field, providing a unique perspective on the interplay between terminology and strategy in SCM.

Keywords: Supply chain management, SCM competency, SCM framework changes

3 CONCEPTUALIZING SUPPLY CHAINS AS A MULTILEVEL AND MULTIPLE PHENOMENON: REFLECTIONS AND PROPOSAL OF AN INTEGRATIVE FRAMEWORK

Research Paper 2: Essay

The multiple supply chain perspective stream

Presented (*portuguese version*): XXV SEMEAD – Seminários em Administração (PPGA FEA/USP) São Paulo, 2022

Note for the reader: By segmenting the supply chain based on organizational flows, what commonly occurs is the isolated characterization of these flows from the traditional supply chain perspective of nodes and links. However, in this study, I invite you to reflect on how alternative ways of characterizing the supply chain can coexist beyond this traditional view. I argue that, while an organization is part of one or more supply chains as a company, it is also a set of its own supply chains managed through supply chain processes across multiple organizational levels. This coexistence is possible due to the multiplicity of existing frameworks within them.

3.1 Introduction

In their paper published on June 15, 2018, in the Harvard Business Review, Lyall, Mercier, and Gstettner (2018) made a decisive prediction: "Within 5-10 years, the supply chain function may become obsolete, replaced by a seamless operating, self-regulating system that optimally manages end-to-end workflows and requires minimal human intervention" (LYALL; MERCIER; GSTETTNER, 2018).

While the authors' assertion was unequivocal, the "death" they proclaimed can be interpreted in the context of traditional supply chain management, which encompasses data processing and decision-making—a paradigm that may soon be supplanted by technological advancements and digitization (MIN; ZACHARIA; SMITH, 2019). This conventional management approach involves how the supply chain phenomenon is perceived and described. In other words, it adheres to a traditional view, as described by

Carter, Rogers, and Choi (2015), of the supply chain ranging from as either a simple chain or as a broader network comprising many companies.

Alternatively, other ways of representing the supply chain have been formulated and presented in the literature. One such approach involves viewing the supply chain as a multilevel phenomenon (CARTER; MESCHNIG; KAUFMANN, 2015). In this perspective, the supply chain phenomenon spans from individuals to groups, functions, and organizations, and each empirical finding can be better contextualized at its appropriate level, thereby enhancing research reproducibility. Another alternative, rooted in Fisher (1997), Gattorna (2006), and Carter, Rogers, and Choi (2015), uses the relativism of product-agent to describe the organization as a set of supply chains.

At this juncture, with the "death sentence" pronounced on the traditional way of managing supply chains, contemplating alternative approaches, in particular, the two presented earlier, may correspond fruitful paths to finding answers that steer operations toward the complex and dynamic challenges of the future. Indeed, Min, Zacharia, and Smith (2019) highlight that a part of the transformation initiated by Industry 4.0 involves managing multiple supply chain configurations with distinct strategies and levels of customization and value for customers, both intra and inter-organizational. Beyond practical implications, exploring different theoretical frameworks also enriches the theory with new potential concepts and understandings of the supply chain phenomenon. Thus, the research question is: *How to conceptualize the perspective of multiple supply chains considering both theoretical frameworks and practical applications?*

Thus, this essay is dedicated to exploring less conventional approaches in characterizing the supply chain phenomenon and consolidating them into a cohesive theoretical framework. To achieve this, it begins with a brief overview of the historical development within the supply chain field. It then scrutinizes the dominant perspective typically employed in understanding the supply chain. Subsequently, it delves into two previously mentioned alternative viewpoints. Finally, it constructs a framework to categorize and vividly illustrate each of these perspectives.

3.2 Supply Chain: Building a shared understanding (and predominant)

Despite originating in the 1980s and gaining popularity in the 1990s, supply chain management remains a subject of significant academic and professional interest. A simple search of the term in a scientific article repository will yield thousands of studies dedicated to the discipline. Similarly, a search in the curricula of various higher education institutions worldwide will reveal its almost mandatory inclusion in production engineering and management programs, sometimes competing with the traditional discipline of operations management (AKALIN; HUANG; WILLEMS, 2016). Furthermore, when browsing job vacancy listings, positions incorporating the term "supply chain" can be easily found, ranging from operational roles to executive positions, underscoring the concept's permeability across various professional spheres.

However, despite its widespread recognition in different sectors of society, ongoing debates persist, spanning from consensus on how to manage the supply chain (LEMAY et al., 2017) to its understanding as a construct (CARTER; ROGERS; CHOI, 2015), even when considering the interactive element beyond a single organization (GIANNAKIS; CROOM; SLACK, 2004; GRIMM et al., 2015). This ambiguity surrounding the understanding among researchers and professionals about the elements and common language of the supply chain can, on the one hand, be attributed to its close connection to practice (CARTER; KOSMOL; KAUFMANN, 2017). As it continually evolves and reinvents itself, this debate is naturally revisited, and definitions are reevaluated (CSCMP, 2021):

> "The supply chain management profession has continually changed and evolved to fit the needs of growing global supply chains. Because the supply chain covers a wide range of disciplines, the definition of what a supply chain is can be somewhat unclear" (CSCMP, 2021).

On the other hand, scholars like Singhal and Singhal (2012) attribute the infancy of this discipline to its lack of consensus, suggesting that as it matures, it will gain a better understanding of itself (LEMAY et al., 2017). Within this stage of maturation, the discipline remains predominantly centered on the "operations management - manufacturing - process - positivism" nexus (BURGESS; SINGH; KOROGLU, 2006), justifying recent calls for more studies exploring the human element with all its individual and social complexities in the supply chain (e.g., HOBERG; THORNTON; WIELAND, 2020). It is also built upon empirical evidence to its growth within a Lakatosian perspective (BURGESS; SINGH; KOROGLU, 2006).

Although the question of "what is a supply chain?" presents its nuances, the definition proposed by Mentzer et al. (2001) has predominated in the literature dedicated to the field:

> "A supply chain is defined as a set of three or more entities (organizations or individuals) directly involved in the flows of products, services, information, and financial transactions from the primary suppliers to the ultimate customer" (MENTZER et al., 2001, p. 4).

Before delving into these perspectives, it's crucial to briefly consider the implications of the main definition for the primary branch of supply chain studies. According to this definition, the supply chain encompasses three or more organizations directly involved in the flow of products, services, information, and financial transactions from primary suppliers to end customers. This viewpoint emphasizes "organizations" and operates from a "closed node" perspective, treating the organization as the fundamental unit for analyzing the supply chain phenomenon (CARTER; MESCHNIG; KAUFMANN, 2015).

This discussion isn't about drawing a simple, linear connection between the definition of the supply chain and its role in shaping the entire theoretical framework focused on technical and technological aspects. Besides, it aligns with the field's historical development, rooted in positivism (HANSALI; GOURCH, 2020). As suggested by Hoberg, Thornton, and Wieland (2020), while this macro perspective aids in coordinating or managing the system of "three or more organizations," it falls short of comprehensively addressing the current complexities of the field.

This discussion holds significance beyond the mere adoption of a definition and moving forward pragmatically. The concept of enclosing organizations within a "closed node" allows for more controlled management, akin to handling a machine, ensuring smooth and "optimal" flow from primary suppliers to end customers. However, the world's current complexities demand solutions that surpass the traditional emphasis on control, rationality, optimization, and objectivity within the supply chain field (DARBY; FUGATE; MURRAY, 2019; HANSALI; GOURCH, 2020; HOBERG; THORNTON; WIELAND, 2020). These challenges require a broader approach.

3.3 The Supply Chain as a multilevel phenomenon

Contrary to the dominant viewpoint, alternative perspectives on understanding supply chains, while not necessarily new, have demonstrated their practicality. One such approach involves the concept of "unpacking" the "closed node," which entails considering the organization as the fundamental unit for analyzing the supply chain and recognizing it as a multi-level phenomenon (CARTER; MESCHNIG; KAUFMANN, 2015).

Viewing the supply chain from a multi-level perspective involves examining how supply chain processes operate across various potential organizational levels within the organization itself. For instance, scrutinizing the supplier-customer relationship from a macro viewpoint, with the organization as the focal point of analysis, can yield conclusions that a micro-level study would not reach, and vice versa (CARTER; MESCHNIG; KAUFMANN, 2015).

Therefore, Carter, Meschnig, and Kaufmann (2015) advocate for advancing toward multi-level studies within supply chains as a consistent way of evolving the field. They propose various levels, from individuals to groups, functions, organizations, and ultimately to supply chains, aiming to provide relevant and profound insights at each level.

The initial tier in this model involves individuals examined concerning their subjective experiences, focusing on themes related to behavior and decision-making abilities. Current concerns encompass cognitive capabilities required to process vast amounts of information facilitated by digital technologies, such as SCM 4.0 (ZEKHNINI et al., 2020; HOBERG; THORNTON; WIELAND, 2020).

The subsequent tier involves groups and teams, defined as collections of individuals working together for a specific organizational purpose, notably within the supply chain context. This level encompasses teams dedicated to process improvement or operational efficiency. Research avenues explore how these groups learn and interact and the resulting impact on supply chain performance (CARTER; MESCHNIG; KAUFMANN, 2015).

The third level refers to functions within businesses. A function can be seen as the management of a core or supporting process. It involves a set of activities specific to an organization, and what Carter, Meschnig, and Kaufmann (2015) describe as a "subculture", represents a distinct way of thinking. For instance, the production function

oversees the resource allocation for producing and delivering products or services. Similarly, other functional areas within the supply chain, such as planning, logistics, and procurement, are also examples of business functions (Slack, Chambers, and Johnston, 2009).

It's important to note that according to Carter, Meschnig, and Kaufmann (2015), business units can also be classified as functional units despite being viewed as organizations with specific functional areas like production, finance, and so on. These units might specialize in particular products within an organization. When they have a hierarchical and centralized relationship with a headquarters, they are termed subsidiaries, operating in both domestic and global markets (MIA; CLARKE, 1999; DELANY, 2000).

The fourth level involves organizations playing roles as focal companies, suppliers, customers, and others within the established structure of the supply chain. Research in this area might explore how measures of organizational performance affect the functional areas, groups, and individuals engaged in supply chain processes (CARTER; MESCHNIG; KAUFMANN, 2015).

Lastly, organizations collectively form supply chains, representing the highest tier in the hierarchical structure and finalizing the comprehensive framework of supply chain levels. It's worth noting that this level is where studies on coopetition within supply chains, focusing on the inter-organizational perspective, are positioned (BENGTSSON; RAZA-ULLAH, 2016).

3.4 The Perspective of multiple supply chains

The multiple supply chains perspective offers an alternative approach to the traditional view and complements the multilevel perspective. Unlike the conventional notion of "closed nodes" and links within the supply chain, this perspective focuses on supply chains from specific segments rather than the organization as a whole. Within this framework, each supply chain possesses its unique characteristics and distinctions.

In his influential 1997 study, Fisher differentiated between supply chain strategies for functional and innovative products. He demonstrated that specific criteria linked to the product type (whether functional or innovative) significantly influence strategic decisions and supply chain management.

Continuing within this perspective, a subfield of research emerged, focusing on luxury product supply chains (e.g., BRUN et al., 2008; CANIATO et al., 2011), automotive supply chains (e.g., CHARAN et al., 2009; VANALLE et al., 2017), among others.

Other perspectives have been added to the way supply chains are perceived. For example, another dimension emerged to study so-called "green" supply chains (e.g., KLASSEN; JOHNSON, 2004; SANTA-EULALIA et al., 2011), sustainable supply chains (e.g., LINTON et al., 2007; O'ROURKE, 2014), and more recently, circular supply chains (e.g., NASIR et al., 2017; FAROOQUE et al., 2019).

Nonetheless, Gattorna (2006) made a crucial observation that led to what is termed in this study as the perspective of multiple value/supply chains. While his primary focus was on exploring the implications of this observation, Gattorna (2006) revealed an organizational viewpoint for supply chain practitioners through the lens of the multiple supply chains perspective, as follows:

> "Most firms contain literally hundreds of value chains that, when taken together, resemble more an electrified plate of spaghetti than well-aligned conveyor belts" (GATTORNA, 2006, p. 2).

Gattorna (2006) suggests that despite the potential existence of "literally hundreds" of value chains within an organization, only a few configurations are necessary to steer supply chain management strategy. These configurations are primarily associated with consumer behaviors, which are dynamic and, therefore, fill the gaps left by Fisher (1997), who, according to the author, focused on the product itself and had a more static view of demand behavior, assuming it remains constant under any market conditions.

By viewing the organization as multiple supply chains, Gattorna (2006) brings to the discussion the human element, which becomes vital for the development of this field: "*It's time to stop thinking of the value chain as a 50/50 mix of infrastructure and information system technology. Start thinking of the ideal mix as something like 45/45/10 – human behavior, systems technology, and infrastructure*" (GATTORNA, 2006, p. 5), hinting at the complementarity of this perspective with the multilevel concept: "*Once we accept this fact, a new world of performance improvement beckons, coming from every intra and inter-organizational interface*" (p. 5).

Consequently, supply chains transition from a predominantly operational and technological orientation to a more sociological and marketing-driven approach (LASKOWSKA-RUTKOWSKA, 2007), with supply chains perceived as living organisms created by and for people. This perspective aligns with Carter, Rogers, and Choi's (2015) concept of supply chain relativism, where the supply chain is relative to a particular agent or product. Thus, while relativism to a type of product or agent, this condition encompasses not only the development of the field within the notion of multiple supply chains (e.g., Fisher's functional and innovative products and Gattorna's agent-client concept) but also opens doors to more abstract theoretical developments that contribute to explain situations in the real world.

In this sense, an organization can be viewed as a node in one or more supply chains (closed node) but can also be seen as a set of supply chains. These supply chains are outlined by their material, informational, and financial flows, spanning across the organization from a selected group of actors and extending to the visible horizon of the focal company.

Additionally, distinctions can be drawn based on product characteristics or the agents involved (such as customer segmentation) given by their discourse. This understanding gives rise to two immediate implications. Firstly, when linked to a specific product type, the supply chain is defined by a set of attributes inherent to that product, encompassing elements tied to its sourcing, production, and distribution processes. For instance, Fisher (1997) identifies aspects of demand behavior (e.g., margin, variety, forecasting error), and Brun et al. (2008), following Nueno and Quelch (1998), highlight the critical success factors for luxury products.

On the other hand, relativism stemming from discourse is less objective, as it depends on a range of contextual factors, making the supply chain, as a concept, possess an artificial nature akin to what Krippendorf (2011) suggests. Take the example of BAT (BRITISH AMERICAN TOBACCO, 2019) to illustrate the relative aspect of discourse within this supply chain perspective. An excerpt from BAT's sustainability report (2019) separates its supply chains into "leaf" and "non-leaf" to guide management approaches:

> "We also consider BAT's progress over the years with respect to managing and improving sustainability aspects for both its leaf and non-leaf supply chains. BAT's approach to the latter - building internal capacity complemented by external support as needed - is commendable. We note that the company has not yet published the

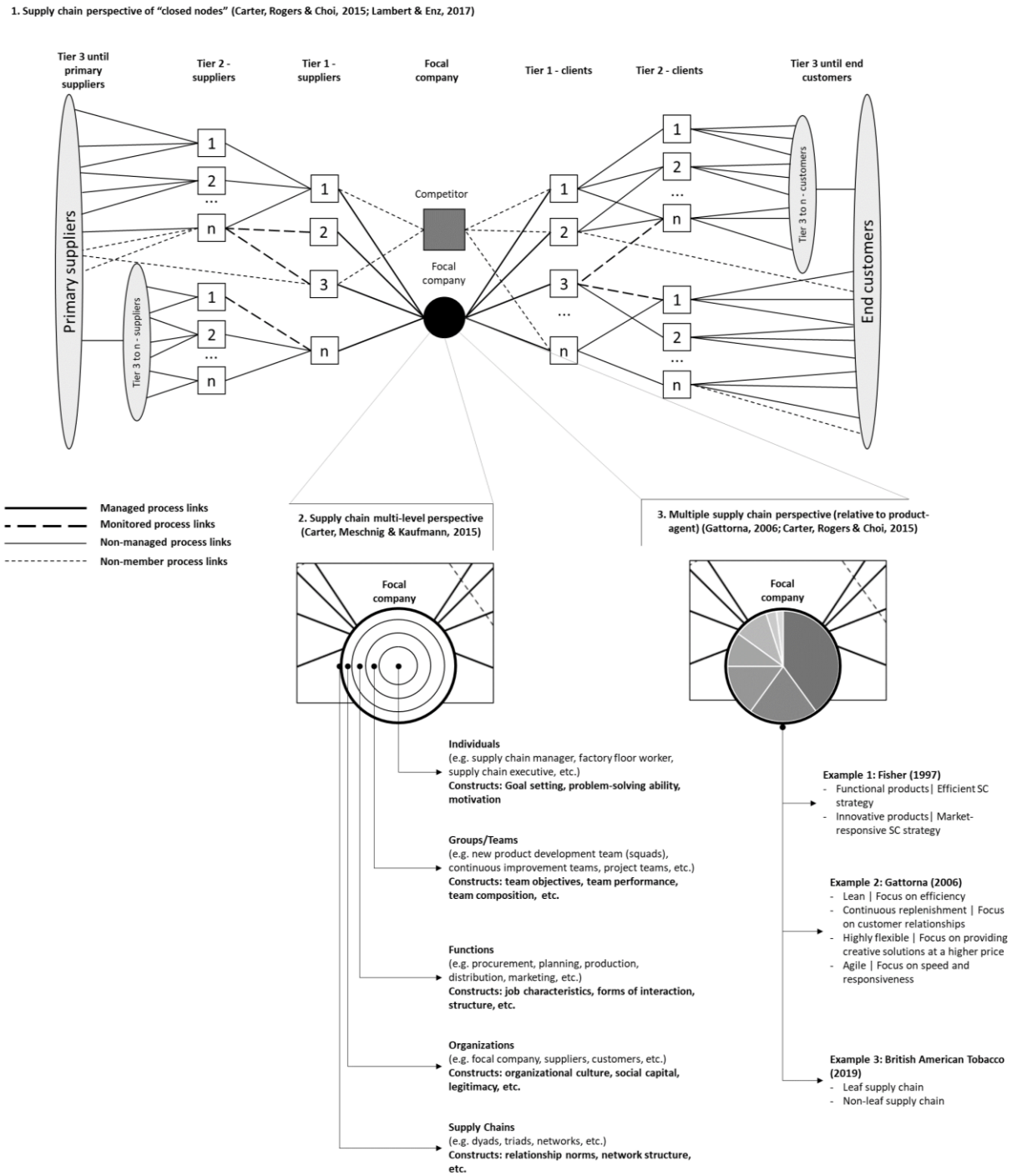
> results of a country-by-country assessment of the risks posed by climate change and look forward to this being addressed in its reports in the near future" (BAT, 2019, p. 27).

In this excerpt, although there is the element of "leaf" characterizing a product type (or raw material), its counterpart, "non-leaf," places the perspective of multiple supply chains within a non-traditional frame in both organizational and functional contexts although it refers to sustainability function.

3.5 The Combination of perspectives in an integrative framework

Following the preceding discussion on three potential pathways for directing supply chain studies, this study introduces a unifying framework depicted in Figure 3.1. This framework emerges from the earlier detailed discourse, and it is structured with the conventional perspective positioned at the top, emphasizing a comprehensive view of the supply chain through interconnected nodes and links spanning inter-organizational levels. Figure 3.1 also includes complementary perspectives below: one that perceives the supply chain as a multilevel phenomenon and another that conceptualizes it as multiple supply chains.

Figure 3.1 - Integrative framework of supply chain perspectives



3.6 Conclusions

This essay aimed to explore the existing, albeit limited, alternative perspectives found in the literature regarding understanding the supply chain phenomenon. The goal is to merge these viewpoints into a cohesive and integrative theoretical framework. In pursuit of this objective, the study introduced and analyzed two distinct approaches to conceptualizing the supply chain, demonstrating the connection between them.

It's important to acknowledge that, as an essay, this work provides a selective overview of current studies and discussions. The practical application and validation of these concepts extend beyond the scope of this study.

Nevertheless, the primary argument presented in the conclusion is that considering the supply chain phenomenon through these alternative lenses holds the potential to advance both theory and practice in supply chain management. These perspectives offer a contrast to the conventional viewpoint, which often confines research within a rigid theoretical framework focused on closed nodes. Exploring the potential offered by these alternative viewpoints reveals that the concept of multiple supply chains can drive the fine segmentation of supply chains concerning both products and agents. This view allows for a more personalized and tailored approach.

In conclusion, it's vital to highlight that despite focusing on two alternative viewpoints, the aim is not to argue that the prevailing perspective in supply chain research has become irrelevant. Besides, the core message is that it alone cannot adequately tackle the challenges posed by a changing supply chain landscape marked by uncertainty. Additionally, the two alternative perspectives discussed herein are not limiting; however, they signify promising avenues for navigating the intricate and dynamic landscape of the future supply chain.

4 IS A MULTIPLE SUPPLY CHAIN MANAGEMENT PERSPECTIVE A NEW WAY TO MANAGE GLOBAL SUPPLY CHAINS TOWARD SUSTAINABILITY?

Research Paper 3: Empirical Research

The multiple supply chain perspective stream

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Note to the reader: At this point in the research, building upon the theoretical framework developed from previous articles, I illustrate what I term "the perspective of multiple supply chains" as a way to perceive the phenomenon in question. In the upcoming article, I provide empirical examples of how this perspective is embedded within organizational discourse, addressing the study of the supply chain from the organizational sustainability agent relativism perspective, which predominantly segments, in the cases analyzed, the multiple supply chains based on raw material supply chains. The key point I highlight here is that both internal and external contexts, as well as the specific needs of an organization at a given moment, drive segmentation, which in turn leads to the unique orientation and management of each supply chain.

Abstract

The imperative for building a sustainable future depends on how organizations manage their supply chains, which are responsible for processing raw materials into finished products. Recently, a new trend has been emerging in some companies, considering not only an entire supply chain but several supply chains inside the organization. This way of approaching sustainability, by focusing on several supply chains, can be called a multiple supply chain perspective, and professionals' interest in this context has been growing. This study aims to explore essential components needed to manage multiple supply chains toward sustainability from a focal company perspective. Sustainability reports from 25 companies leaders in supply chain management are analyzed using content analysis and

correspondence analysis. As a result, a conceptual model is proposed, considering four essential components: supply chain processes; relational mechanisms; monitoring and control mechanisms; and sustainability outcomes. Based on this conceptual model, six propositions are elaborated to be further empirically explored in the literature. The proposed conceptual model helps supply chain and sustainability managers to improve their efforts toward sustainability by revealing what components are needed to manage each different supply chain and by helping to create more focused strategies that are effective in different scenarios.

Keywords: Supply chain management; Global supply chains; Entire supply chain; Multiple supply chains; Sustainability

5 COOPETITION DYNAMICS IN SUPPLY CHAIN MANAGEMENT: PATTERNS, TYPOLOGY AND PROPOSITIONS

Research Paper 4: Systematic Literature Review

The coopetition steam.

Under revision in the Journal of Business and Industrial Marketing (ISSN 0885-8624)

Note for the reader: From this article onwards, I begin the development of the second steam of this thesis, which addresses coopetition. By providing the theoretical and empirical foundations of the multiple supply chain perspective, I revisit the interest in how multiple supply chains relate to each other, and where the term “coopetition” emerges, which is the combination of cooperation and competition. However, to navigate through this topic, I conduct a systematic literature review to understand how coopetition in the supply chain has been studied, seeking to capture synergies or at least start from a set of central and fundamental concepts for empirical study.

5.1 Introduction

Bengtsson and Kock (2014) define coopetition as "*a paradoxical relationship between two or more actors, regardless of whether they are in horizontal or vertical relationships, simultaneously involved in cooperative and competitive interactions*" (p. 180). However, coopetition can also be described as a phenomenon (e.g., GAST et al., 2015; GERNSHEIMER; KANBACH; GAST, 2021), a process (e.g., BOUNCKEN et al., 2015; MONTICELLI; VERSCHOORE; GARRIDO, 2023 - dynamic and strategic), a strategy (e.g., GNYAWALI; PARK, 2011; SONG; CHEON; PIRE, 2015), or even a game (e.g., STAMBOULIS, 2007, referring to game theory).

In the context of supply chains, coopetition can be seen as a paradoxical relationship between two or more supply chain rivals involved in cooperative planning or the execution of supply chain practices while competing in other activities (KATSALIAKI; KUMAR; LOULOS, 2023). According to Meena, Dhir and Sushil (2023), coopetition in the supply chain is one of the major research streams in the field.

Previous research has shown that coopetition in supply chains can lead to a wealth of benefits, including increased innovation potential (RAFI-UL-SHAN; GRANT; PERRY, 2022), improved operational performance and organizational knowledge (YAN; ZHAO; LAN, 2019; MUNTEN et al., 2021; LIU; ZHANG; ZHAO, 2021), reduced barriers to entering new markets (WALLENBURG; SCHÄFFLER, 2016; NIU et al., 2020), and even a reduction in the environmental impact of supply chain activities (LIMOUBPRATUM; SHEE; AHSAN, 2015; STRAUSS, 2019; NIU et al., 2019; JAFARNEJAD et al., 2020; JIANG; LIN, 2021; LIN et al., 2021; CHEN; WANG; XIA, 2021).

However, this body of literature has largely skirted a salient issue: the heterogeneity in how coopetition manifests and is managed across varying types of supply chains. Despite acknowledging that coopetition is not a uniform or one-size-fits-all strategy (LIN et al., 2010; BAGHERZADEH; GHADERI; FERNANDEZ, 2022), there is a conspicuous absence of nuanced, targeted analysis that accounts for the diversity in supply chain types and the implications this has for coopetition management (CARTER; ROGERS; CHOI, 2015).

While some studies have quickly touched upon the varying nature of coopetitive strategies according to the type of supply chain (e.g., DEVECE; RIBEIRO-SORIANO; PALACIOS-MARQUÉS, 2019; SCHIFFLING et al., 2020; SEEPANA; PAULRAJ; HUQ, 2020; NIU et al., 2020; MUNTEN et al., 2021), these discussions are often not the central focus and thus do not offer substantive, actionable insights. Consequently, supply chain managers find themselves in an intricate maze when trying to ascertain the true value and risks of coopetition within their specific contexts. Investigations by Crick (2019) and Crick and Crick (2021) further muddy waters by presenting cases where coopetition may not be the best strategic option.

Given this background, the urgency for a comprehensive exploration into how coopetition operates across different supply chains becomes even more pressing (KATSALIAKI; KUMAR; LOULOS, 2023). In light of the identified research gaps and the urgent need for a nuanced understanding of coopetition in various types of supply chains, this research aims to fill identified gaps in the literature by systematically identifying and analyzing the types of supply chains most frequently engaged in coopetitive practices.

This study seeks to elucidate the common drivers and outcomes that typify these coopetitive engagements, extending the discourse beyond mere identification to an exploration of underlying motivations and resultant benefits or drawbacks. In addition, this study takes a nuanced approach to dissecting the main types of coopetition by identifying key characteristics, investigating driving factors, and assessing effective management practices and outcomes for each. More specifically, our research questions are as follows:

> RQ: What concepts and theoretical structures have been used to study coopetition within the literature? How does cooperation occur in supply chains through drivers, practices and outcomes?
>
> The RQ is divided into two specific questions:
>
> Q1) In light of the literature, which types of supply chains most frequently engage in coopetitive practices, and what common drivers and outcomes characterize these engagements?
>
> Q2) What specific drivers, practices, and outcomes characterize the management of different types of coopetition across diverse types of supply chains and sectors, and what is the relationship between them?

To address these questions, this research was divided into three phases. The first phase involved a scoping review in identifying previous literature reviews on coopetition, establishing the theoretical framework in the field, and creating an initial codebook. The second phase consisted of a systematic literature review that yielded 130 papers. The third phase involved analyzing the results through correspondence and contingency analysis.

The results showed that while literature reviews have explored the concept of coopetition, only a recent review has explored the topic of coopetition within supply chain management, which has focused on the manufacturer's perspective. This is a noteworthy opportunity to explore multiple angles of coopetition in supply chains, given the significance of supply chain management in the broader scope of coopetition, as cited by Meena, Dhir and Sushil (2023). The literature also presents a triadic framework of drivers, practices, and outcomes, which has been instrumental in structuring and enhancing the field around its principal themes.

In addition, this study identified more than ten supply chain types, four of which are particularly prevalent in coopetition research. Additionally, this study explored supply chain coopetition from 26 drivers (D), 13 coopetition practices (P/C), divided into cooperation and competition, and nine potential outcomes (O). Our study further delineated three unique models of coopetition within supply chains: technology-based, relationship-based, and channel-based. These models have led us to formulate five propositions that warrant further investigation in future research.

The results of this study contribute to both practice and theory. First, this study organizes the coopetition literature specifically related to supply chain driver-practical outcomes, complementing previous literature reviews that focused on general coopetition (e.g., BOUNCKEN et al., 2015; BENGTSSON; RAZA-ULLAH, 2016; DORN; SCHWEIGER; ALBERS, 2016; GERNSHEIMER; KANBACH; GAST, 2021) or other major research streams within coopetition (e.g., DELLA CORTE, 2018; SINDAKIS; AGGARWAL; CHEN, 2019; MEENA; DHIR; SUSHIL, 2023).

According to the review of Katsaliaki, Kumar and Loulos (2023), this study adopted the driver-practices-outcomes triptych to explore coopetition in the supply chain and focused on sectoral supply chains. In addition, the study advances and complements the discussion, filling the gap about other types of coopetition present in supply chain coopetition – as channel coopetition – and providing a relationship with potential outcomes.

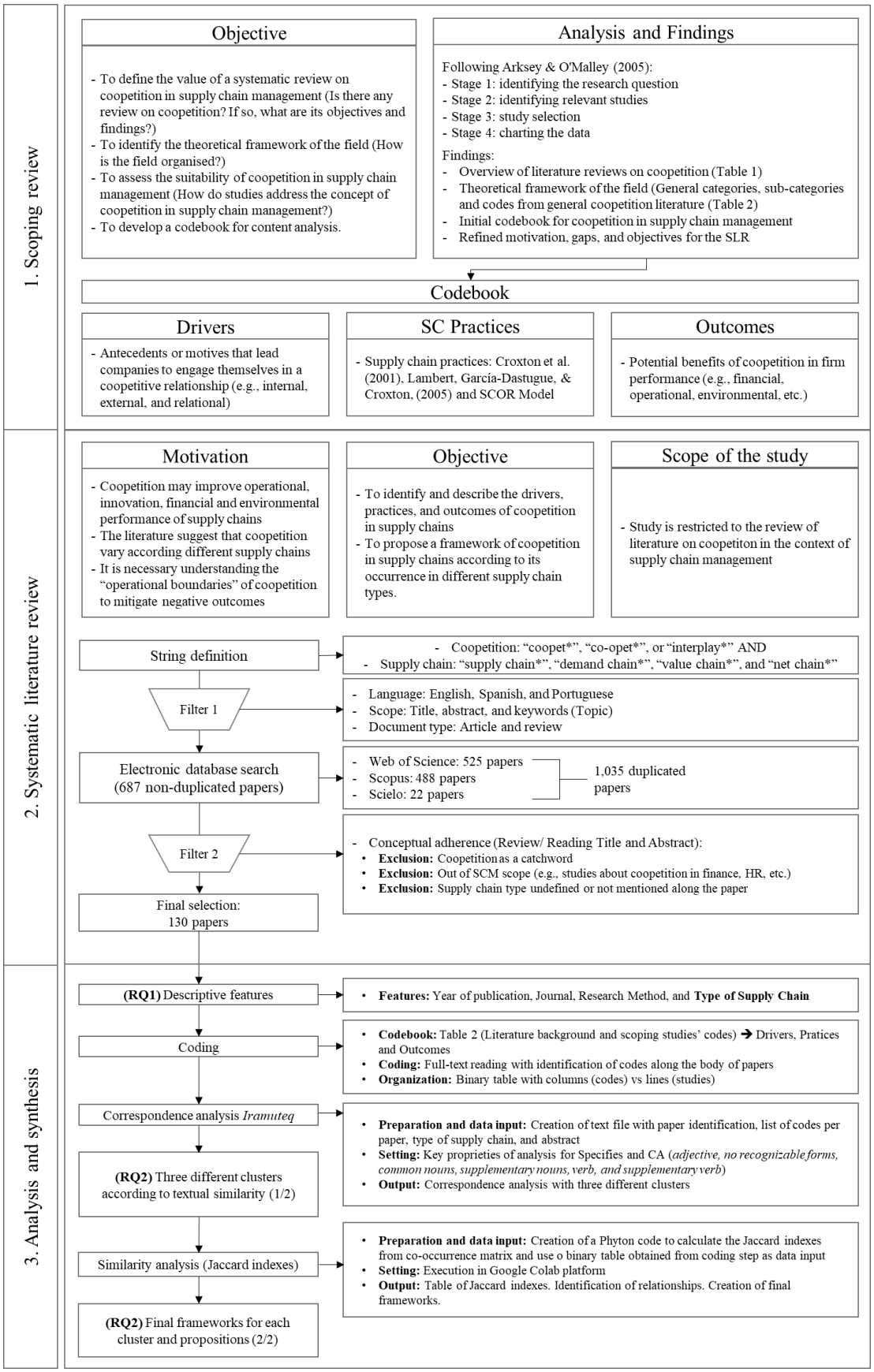
Furthermore, it highlights similarities and differences in coopetition across various supply chains. In terms of practice, this study has developed a comprehensive typology to assist decision makers in making informed choices regarding the adoption of coopetition and reaping its benefits while mitigating the risks associated with poorly managed coopetitive relationships (CRICK, 2019; XIE et al., 2023). The typology encompasses drivers, practices, and outcomes, considering the diversity of supply chains.

The study is organized as follows: section 2 details the research method adopted. Section 3 presents the findings from the study in two subsections according to the research questions. Finally, section 4 concludes the paper.

5.2 Research method

Figure 5.1 illustrates the research methodology employed in this study, which consists of three main phases: 1. Scoping review, 2. Systematic Review, and 3. Analysis and synthesis.

Figure 5.1 – Research summary


1. Scoping review
Objective
- To define the value of a systematic review on coopetition in supply chain management (Is there any review on coopetition? If so, what are its objectives and findings?)
- To identify the theoretical framework of the field (How is the field organised?)
- To assess the suitability of coopetition in supply chain management (How do studies address the concept of coopetition in supply chain management?)
- To develop a codebook for content analysis.
Analysis and Findings
Following Arksey & O'Malley (2005):
- Stage 1: identifying the research question
- Stage 2: identifying relevant studies
- Stage 3: study selection
- Stage 4: charting the data
Findings:
- Overview of literature reviews on coopetition (Table 1)
- Theoretical framework of the field (General categories, sub-categories and codes from general coopetition literature (Table 2)
- Initial codebook for coopetition in supply chain management
- Refined motivation, gaps, and objectives for the SLR
Codebook
Drivers
- Antecedents or motives that lead companies to engage themselves in a coopetitive relationship (e.g., internal, external, and relational)
SC Practices
- Supply chain practices: Croxton et al. (2001), Lambert, García-Dastugue, & Croxton, (2005) and SCOR Model
Outcomes
- Potential benefits of coopetition in firm performance (e.g., financial, operational, environmental, etc.)
2. Systematic literature review
Motivation
- Coopetition may improve operational, innovation, financial and environmental performance of supply chains
- The literature suggest that coopetition vary according different supply chains
- It is necessary understanding the "operational boundaries" of coopetition to mitigate negative outcomes
Objective
- To identify and describe the drivers, practices, and outcomes of coopetition in supply chains
- To propose a framework of coopetition in supply chains according to its occurrence in different supply chain types.
Scope of the study
- Study is restricted to the review of literature on coopetiton in the context of supply chain management
String definition
- Coopetition: "coopet*", "co-opet*", or "interplay*" AND
- Supply chain: "supply chain*", "demand chain*", "value chain*", and "net chain*"
Filter 1
- Language: English, Spanish, and Portuguese
- Scope: Title, abstract, and keywords (Topic)
- Document type: Article and review
Electronic database search (687 non-duplicated papers)
- Web of Science: 525 papers
- Scopus: 488 papers
- Scielo: 22 papers
1,035 duplicated papers
Filter 2
- Conceptual adherence (Review/ Reading Title and Abstract):
• Exclusion: Coopetition as a catchword
• Exclusion: Out of SCM scope (e.g., studies about coopetition in finance, HR, etc.)
• Exclusion: Supply chain type undefined or not mentioned along the paper
Final selection: 130 papers
3. Analysis and synthesis
(RQ1) Descriptive features
• Features: Year of publication, Journal, Research Method, and Type of Supply Chain
Coding
• Codebook: Table 2 (Literature background and scoping studies' codes) → Drivers, Pratices and Outcomes
• Coding: Full-text reading with identification of codes along the body of papers
• Organization: Binary table with columns (codes) vs lines (studies)
Correspondence analysis Iramuteq
• Preparation and data input: Creation of text file with paper identification, list of codes per paper, type of supply chain, and abstract
• Setting: Key proprieties of analysis for Specifies and CA (adjective, no recognizable forms, common nouns, supplementary nouns, verb, and supplementary verb)
• Output: Correspondence analysis with three different clusters
(RQ2) Three different clusters according to textual similarity (1/2)
Similarity analysis (Jaccard indexes)
• Preparation and data input: Creation of a Phyton code to calculate the Jaccard indexes from co-occurrence matrix and use o binary table obtained from coding step as data input
• Setting: Execution in Google Colab platform
• Output: Table of Jaccard indexes. Identification of relationships. Creation of final frameworks.
(RQ2) Final frameworks for each cluster and propositions (2/2)

5.2.1 Scoping Review

The scoping review (Figure 5.1) was the initial step. According to Arksey and O'Malley (2005), a scoping review rapidly maps vital concepts in a research topic as part of an ongoing systematic review. In this case, the review aimed to determine the value of a systematic review on coopetition in supply chain management, identify the theoretical framework, assess suitability, and develop an initial codebook for content analysis.

Following Arksey and O'Malley's (2005) guidelines, an initial search was conducted on Google Scholar using the terms "coopetition" and "review" to retrieve literature reviews, as well as "coopetition" and "supply chain" for relevant publications based on the first ten pages retrieved in the search. Systematic literature reviews on coopetition were then organized in a table, including the author, year, title, journal, number of articles analyzed, study goals, and findings. Scholars' defined categories and sub-categories were identified for organizing the field.

5.2.2 Systematic Literature Review

For the search for coopetition in supply chains, analysis was performed on articles listed within the first ten pages of relevance on Google Scholar. Initial codes were created based on the identified categories and sub-categories. This process led to the development of an initial codebook for the systematic literature review. Croxton et al. (2001), Lambert, García-Dastugue, and Croxton (2005), and the Supply Chain Operations Reference Model (SCOR model) (HUAN; SHEORAN; WANG, 2004) provided the theoretical basis for addressing supply chain practices. The second filter yielded 687 papers.

The systematic literature review followed Tranfield, Denyer, and Smart's (2003) steps of planning, conducting the review, and reporting the results. Figure 5.1 summarizes the research steps. A research protocol was established for process reproducibility and research rigor. The protocol involved creating a string to group coopetition and supply chain topics. The terms "coopet*", "co-opet*", or "interplay*" were chosen for coopetition, and "supply chain*", "demand chain*", "value chain*", and "net chain*" were used for the supply chain topic.

Three academic databases (WoS, Scopus, and Scielo) were selected based on their relevance to operations and supply chain management studies. The search string resulted

in 525 papers from WoS, 488 studies from Scopus, and 22 papers from Scielo, totaling 687 non-duplicated papers. A second filter removed studies that used coopetition as a catchword or approached it from perspectives unrelated to the supply chain. This filter enabled the detection of coopetition within specific sectors' supply chain practices, allowing for the identification of different types of supply chains. It is rooted in the observation by Burgess, Singh and Koroglu (2006) that the supply chain concept has been liberally utilized in the literature. Hence, this framework aims to maintain flexibility while ensuring the inclusion of studies in the final sample by focusing on supply chain practices.

5.2.3 Analysis and Synthesis

In the content analysis step (Analysis and synthesis – Figure 5.1), each paper was read and coded based on the codes listed in Table 5.2, inspired by Bengston and Raza-Ullah (2016). The analysis also involved identifying the type of supply chain referenced in each paper for cluster analysis.

The abstracts were organized into a text file, labelled according to supply chain type, and identified codes. Iramuteq software was used for analysis, creating a dictionary of words and applying chi-squared tests to reveal strong associations between terms and clusters ($p<0.0001$). Approximately 93% of the text segments were classified, ensuring quality assessments. Correspondence analysis (CA) was applied, grouping texts into clusters based on similarities. CA analysis identified patterns of coopetition in supply chains, resulting in three clusters: tech-based, relationship-based, and channel-based coopetition.

Contingency analysis was used to examine the relationships between drivers, practices, and outcomes within each cluster. Python code utilizing Jaccard similarity indices was executed on the Google Colab platform. The resulting binary table served as input data for generating a co-occurrence matrix. Jaccard indices were computed for each combination of codes within a cluster, indicating the strength of associations.

Based on the findings, three frameworks were developed by considering the most frequent codes in each cluster and their associations. To enhance readability, only associations between drivers-practices and practices-outcomes were included. Five propositions were derived from the results.

5.3 Results and discussion

The following sections are dedicated to answering the research questions and discussing coopetition in supply chains.

RQ01: In light of the literature, which types of supply chains most frequently engage in coopetitive practices, and what common drivers and outcomes characterize these engagements?

5.3.1 Previous systematic literature reviews on coopetition

Previous literature reviews on coopetition have primarily addressed the topic at various levels, from intraorganizational to network perspectives. These reviews have examined drivers, processes, outcomes, and other related concepts such as antecedents, phases, and outputs. However, they have not specifically emphasized supply chain phenomena. The descriptions of these articles are shown in Table 5.1.

Table 5.1 – Systematic literature review articles on coopetition published in academic journals

Author and year	Article Title	Journal	Articles Reviewed	Study goal	Findings
Gernsheimer, Kanbach and Gast (2021)	Coopetition research - A systematic literature review on recent accomplishments and trajectories	Industrial Marketing Management	161	To summarize past literature reviews that analyzed coopetition research up to 2015. To explore the status quo by organizing and systematically reviewing new research from 2015 to 2020, comparing, contrasting, and integrating previous findings. To detect emerging trends in the field	Drawing on more recent publications from 2015 to 2020, the authors examined the advances made in coopetition research across five dimensions: antecedents, execution, interaction, outcomes, and levels of coopetition. In addition, they identified emerging topics and developed an integrated, cohesive, and comprehensive perspective on coopetition research.
Kostis and Näsholm (2020)	Towards a research agenda on how, when and why trust and distrust matter to coopetition	Journal of Trust Research	29	To identify limitations and gaps in the extant literature on trust in coopetition, bring promising research opportunities into light, and create an agenda for future research focused on the roles of both trust and distrust in coopetition	The authors proposed six research directions to further investigate the topic of trust in coopetition: Types and dimensions of trust and distrust and the relation between them in different coopetitive contexts, Trust and distrust in light of uncertainty and risks in coopetition, Trust and distrust in light of competing demands and tensions in coopetition, The dark side of trust and the bright side of distrust in coopetition, Coevolution of trust and distrust in both the cooperative and competitive arenas of coopetition, and Trust, distrust and the micro foundations of coopetition
Devece, Ribeiro-Soriano and Palacios-Marques (2019)	Coopetition as the new trend in inter-firm alliances: literature review and research patterns	Review of Management Science	75	To complement the previous literature reviews and understand the strength of the research streams within the coopetition literature, the trends and theoretical frameworks that support each of these streams, and the direction of research in the field	The authors categorized the literature on coopetition based on five criteria: analysis level, coopetition objectives, theoretical focus, firm size, and research methodology. Their analysis resulted in the identification of five primary clusters: coopetition in project teams, innovation and economies of scope, alliance dynamics, mathematical and simulation models, and a comprehensive approach to coopetition. Additionally, the authors noted several opportunities for applying coopetition, including in SME networks where firms have comparable bargaining power.
Sindakis, Aggarwal and Chen (2019)	Coopetitive dynamics and inter-organizational knowledge flow among venture capital firms: A systematic literature review	Kybernetes	80	To analyze important theoretical work conducted in the research streams of coopetition dynamics and knowledge flows in the area of start-up entrepreneurship	The authors developed a framework to depict the dynamics of coopetition and inter-firm knowledge flows in the venture capital sector. In their review of the literature, they identified several gaps in the understanding of knowledge sharing activities among competing firms, which could enhance the competitiveness of VC firms.

Table 5.1 – Systematic literature review articles on coopetition published in academic journals (cont.)

Author and year	Article Title	Journal	Articles Reviewed	Study goal	Findings
Bengtsson and Raza-Ullah (2016)	A systematic review of research on coopetition: Toward a multilevel understanding	Industrial Marketing Management	142	To specify the construct of coopetition with respect to different levels, integrate the diverse major themes of coopetition into a coherent whole, and develop an overarching and dynamic multi-level model of coopetition	The study categorized the literature into two main schools of thought: Actor and Activity. Additionally, the study developed a framework based on the major themes identified in the literature - namely, drivers, processes, and outcomes. This framework can facilitate the investigation of coopetition across the various levels in which it can be observed.
Dorn, Schweiger and Albers (2016)	Levels, phases and themes of coopetition: A systematic literature review and research agenda	European Management Journal	169	To gather, analyze, and synthesize coopetition contributions in the management literature in a way that facilitates further research and supports management practice	The authors structured the body of literature into a three-phase model: initiation, management, and shaping. They also differentiated levels of coopetition ranging from intra-firm to network levels. Finally, they developed a framework that links the five major themes in the literature: the nature of the coopetitive relationship, governance and management, outcomes of coopetition, actor characteristics, and environmental characteristics.
Gast, Filser, Gundolf and Kraus (2015)	Coopetition research: towards a better understanding of past trends and future directions	Int. J. Entrepreneurship and Small Business	121	To give an overview on the past, present and future research directions by combing a citation analysis with a systematic literature review,	The authors identified three primary clusters of studies on coopetition: foundations (including traditional and precursor theories), the nature of coopetition, and the scope of coopetition. In addition, they identified corresponding thematic areas in the literature review, including the new coopetition paradigm, coopetition in specific contexts, and coopetition in innovation.
Bouncken, Gast, Kraus and Bogers (2015)	Coopetition: a systematic review, synthesis, and future research directions	Review of Management Science	82	To present a broad and multifaceted view of coopetition in order to synthesize the diverse areas within coopetition research, to develop an integrative definition based on previous research, and to identify a promising agenda for future research	The authors summarized the body of literature into three primary themes: the evolution of research on coopetition, coopetition as a strategy, and the management of coopetition. Additionally, they provided an integrative definition of coopetition.
Katsaliaki, Kumar and Loulos (2023)	Supply chain coopetition: A review of structures, mechanisms and dynamics	International Journal of Production Economics	156	To shed light on four elements: a) the structure of SCC – the functionality of SCC (based on the manufacturing framework: Plan/Source/Make/Deliver as per SCOR model); b) the mechanisms – the strategies used for SCC; c) the dynamics defining the possible behaviors of SCC – the level of coopetition between the players when deploying the identifying mechanisms; and d) trust and learning – the "catalysts" which enable coopetition through various mechanisms and possible dynamics	The authors revised the literature published about coopetition with a focus on the manufacturer's perspective in supply chain management. They defined four types of structure (buyer-supplier; coopetition in production; coopetition within supply networks; coopetition in logistics and distribution), eight mechanisms, and three possible dynamics (competition dominant, collaboration dominant, and balanced). Besides, they considered trust and learning as catalysts that enable coopetition. They created a framework to describe the coopetition interaction between supply chain actors.

Table 5.1 does not include reviews focusing on bibliographic analysis or meta-analysis (e.g., DELLA CORTE, 2018; KÖSEOĞLU et al., 2019; MEENA; DHIR; SUSHIL, 2023; XIE et al., 2023). In addition, literature reviews focusing on collaboration in supply chains were not included in this overview (e.g., FARAHANI et al., 2014; SOOSAY; HYLAND, 2015).

Previous reviews have structured the topic of coopetition by examining its drivers, processes, and outcomes. These elements serve as a means for researchers to integrate this fragmented field. Drivers are identified as antecedents or motives that prompt companies to engage in coopetition. Due to their paradoxical nature, processes focus on exploring the mechanisms and strategies used to manage the tense relationships between competitors. Finally, the outcomes highlight the potential benefits of coopetition, such as increased innovation or reduced operating costs (BENGTSSON; KOCK, 2014; BENGTSSON; RAZA-ULLAH, 2016; DORN; SCHWEIGER; ALBERS, 2016; WILHELM; SYDOW, 2018; DEVECE et al., 2019; GERNSHEIMER; KANBACH; GAST, 2021).

Regarding analysis levels, most studies have concentrated on the inter-organizational level (BENGTSSON; RAZA-ULLAH, 2016; GERNSHEIMER; KANBACH; GAST, 2021). These studies are commonly referred to as coopetition only (CEPTUREANU et al., 2018). However, there is a growing interest, as highlighted by Gernsheimer, Kanbach and Gast (2021), in examining intraorganizational coopetition and exploring its applicability within firm contexts (CHIAMBARETTO; FERNANDEZ; LE ROY, 2022).

5.3.2 General view of coopetition in supply chains

In the context of supply chains, coopetition can be seen as a paradoxical relationship between two or more supply chain rivals involved in cooperative planning or the execution of supply chain practices while competing in other activities. In this study, supply chain practices refer to those listed in the SCOR model (HUAN; SHEORAN; WANG, 2004) or the supply chain management framework (CROXTON et al., 2001; LAMBERT; GARCÍA-DASTUGUE; CROXTON, 2005), with a focus on identifying

cooperative interactions between supply chain rivals within this context, i.e., supply chain management (KATSALIAKI; KUMAR; LOULOS, 2023).

Based on previous reviews and scoping studies of coopetition in supply chains, Table 5.2 summarizes the contribution of the literature to the current thinking and details the codes identified in the scoping studies that provide more specificity about competition in the supply chain. Each RSL code was assigned an index based on the general category to which it belongs (d = drivers, c/p = practice – competition/cooperation, o = outcome). This was used to analyze the papers selected for review in the content analysis step.

Table 5.2 - Literature background and scoping studies' codes

General categories, sub-categories and codes from general coopetition literature	General cat. RSL	Sub-categories RSL	RSL Code	Ref.	Examples of scoping studies coopetition SCM
	Driver	External	Highly competitive market	d1	Brandes et al. (2007); Walley and Custance (2010).
	Driver	External	Demand or supply uncertainty	d16	Zacharia et al. (2019)
General categories:	Driver	External	Existence of particular norms or industry requirements	d17	Kotzab and Teller (2003)
B: Drivers; C/E: Antecedents; E: Execution, Interaction	Driver	External	Technology level of coopetitors	d18	Christ, Burritt and Varsei (2017)
Sub-categories:	Driver	External	Presence of governmental policies that support coopetition	d20	Fathalikhani, Hafezalkotob and Soltani (2020); Hafezalkotob (2017)
B: Internal, External, Relational					
C: Market conditions, Individual factors of firms, Dyadic factors between potential partner firms, Network factor	Driver	External	Number and position of supply chain members	d21	Shockley and Fetter (2015); Pathak, Wu and Johnston (2014); Song, Cheon and Pire (2015)
E: Contingencies, Coopetition experience, Partner fit, Mutual benefits, Value creation, Value appropriation, Partner trust, Trust, Partner interdependence, Partner reputation, Mediation, Cooperative orientation, Tension, Emotions	Driver	External	Market size	d24	Zacharia et al. (2019); Kotzab and Teller (2003)
	Driver	Internal	Leadership support	d2	Christ, Burritt and Varsei (2017)
	Driver	Internal	Presence/ lack of operational capacity to provide a product/component or a service	d3	Brandes et al. (2007); Zacharia et al. (2019); Kotzab and Teller (2003)
Codes:	Driver	Internal	Product characteristics (substitutable/non-subst. products)	d4	Chen, Wang and Xia (2019)
B: Industrial characteristic, Technological demand, Influential stakeholders, Internal goals, Capability, Perceived vulnerability, Prospective strategies, Relationship characteristics, Partner characteristics	Driver	Internal	Product lifecycle (short/long)	d5	Zacharia et al. (2019)
	Driver	Internal	Acceptable costs of operating coopetitive dynamics	d10	Christ, Burritt and Varsei (2017)
	Driver	Internal	Ability to allocate scarce resources	d13	Zacharia et al. (2019); Pathak, Wu and Johnston (2014)
	Driver	Internal	Supply chain responsiveness	d22	Kotzab and Teller (2003)
C: High degree of change and competition, Specific industry settings, Need for knowledge and resource acquisition, Regulatory bodies enforcing/prohibiting coopetition, Self-perception of the firm (for example, regarding vulnerability, position, strategy), Compatible resource endowment, Early or late industry lifecycle stages, Presence of trust, Extant ties of potential partner firms, Firms' position within a network influences coopetition	Driver	Internal	Long-term orientation	d26	Asadabadi and Miller-Hooks (2018)
	Driver	Relational	Willingness to share technology infrastructure	d6	Paché (2013); Limoubpratum, Shee and Ahsan (2015); Kotzab and Teller (2003)
	Driver	Relational	Ability to share risks and benefits	d7	Limoubpratum, Shee and Ahsan (2015)
	Driver	Relational	Assertive and precise communication	d8	Christ, Burritt and Varsei (2017); Limoubpratum, Shee and Ahsan (2015)
	Driver	Relational	Trust	d9	Shockley and Fetter (2015); Wilhelm (2011); Limoubpratum, Shee and Ahsan (2015); Galdeano-Gómez, Pérez-Mesa and Giagnocavo (2015)
D: Transactional governance, relational governance	Driver	Relational	Joint interest on entering in a new market	d11	Arthanari, Carfì and Musolino (2015)
E: Competition, Technological discontinuities, environmental factors, crises, External factors impacting coopetition, Competitor alliance portfolios, Org. readiness to manage coopetition, Cultural, functional and organizational similarity, Transactional governance, Formal and informal knowledge sharing and protection mechanisms, Allocation of generated value among the partners, Role of trust for coopetition performance, Shared mindset, Role of interdependence among competitors, Skills and competences to manage coopetition, Management of tension, Influence of opportunism on performance, Complexity of collaboration structures	Driver	Relational	Power distribution between supply chain members	d12	Fathalikhani, Hafezalkotob and Soltani (2020); Zacharia et al. (2019); Shockley and Fetter (2015); Kotzab and Teller (2003)
	Driver	Relational	Ability to perform in different supply chain echelons	d14	
	Driver	Relational	Ability to maintain a stable relationship with competitor	d15	Christ, Burritt and Varsei (2017); Wilhelm (2011); Walley and Custance (2010). Pathak, Wu and Johnston (2014); Limoubpratum, Shee and Ahsan (2015)
	Driver	Relational	Opportunism	d19	Fathalikhani, Hafezalkotob and Soltani (2020); Pathak, Wu and Johnston (2014)
	Driver	Relational	Presence of a shared performance measurement system	d23	Wilhelm (2011); Kotzab and Teller (2003)
	Driver	Relational	Transparency of information about coopetitive relationship	d25	Christ, Burritt and Varsei (2017); Wilhelm (2011)

References: A: Bengtsson and Kock (2014); B: Bengtsson and Raza-Ullah (2016); C: Dorn, Schweiger and Albers (2016); D: Devece et al. (2019); E: Gernsheimer, Kanbach and Gast (2021)

Table 5.2 - Literature background and scoping studies' codes (cont.)

General categories, sub-categories and codes from general coopetition literature	Main categories RSL	Subcategories RSL	RSL Code	Ref.	Examples of scoping studies coopetition SCM
General categories: B: Processes Sub-categories: B: Dynamic, complex, challenging Codes: B: Configuration and reconfiguration; governance, contract, meta capabilities; multifaceted role, conflict, ambiguity, centrality, power[2]	Practice	Supply chain practices (Cooperation focus)	Cooperating in: p1: Product/process development p2: Outsourcing a product or subcomponent p3: Using competitor's brand p4: External or internal logistics activities p5: Sharing technology about product or process p6: Knowledge and information sharing p7: Practices to reduce negative environmental impact p8: Joint negotiations or procurement activities p9: Sales or marketing Competition in/for: C1: price/ C2: service level/ C3: scarce resources C4: product or service deafferentation/ C5: publicity C6: dividing the benefits of coopetition relationship C7: channel of distribution	c* and p*	Croxton et al. (2001); Lambert, García-Dastugue and Croxton, (2005); Huan, Sheoran and Wang (2004)
General categories: B/E: Outcome C: Evaluation	Outome	Firm performance	Improvement of financial performance of the supply chain	o7	Brandes et al. (2007); Zacharia et al. (2019); Christ, Burritt and Varsei (2017); Hafezalkotob (2017); Pathak, Wu and Johnston (2014); Wilhelm (2011); Sepehri and Fayazbakhsh (2011); Galdeano-Gómez, Pérez-Mesa and Giagnocavo (2015)
Sub-categories: B: Firm performance, Knowledge related, Innovation related, Relationship related E: Firm performance, Organizational learning, Innovation performance, Sustainability strategies	Outome	Firm performance	Improvement of the operational performance of the supply chain	o8	Shockley and Fetter (2015); Fathalikhani, Hafezalkotob and Soltani (2020); Limoubpratum, Shee and Ahsan (2015); Pathak, Wu and Johnston (2014); Wilhelm (2011); Kotzab and Teller (2003)
	Outome	Knowledge related	Access limited or scarce resources and materials	o1	Brandes et al. (2007); Fathalikhani, Hafezalkotob and Soltani (2020); Zacharia et al. (2019)
	Outome	Innovation related	Increase of innovation potential of the supply chain	o3	Brandes et al. (2007); Zacharia et al. (2019)
Codes: A: Competitive advantages, Firm innovation, Technology development, International expansion B: Financial performance, Competitiveness, Knowledge aquisition, Innovation performance (Radical/ Incremental), Goal fullfilment C: Positive outcome with regard to financials and value creation, Influence on firms' abilities (for example, to innovate), Increased value for consumers through enhanced products and innovation D: Efficiency and economies of scale, Technology development and innovation E: Financial impacts of coopetition, Inter-firm learning, Impact of coopetition on different types of innovation, Environmental impacts of coopetition	Outome	Firm performance	Ability to compete in a new or global market	o4	Zacharia et al. (2019); Christ, Burritt and Varsei (2017); Arthanari, Carfì and Musolino (2015); Galdeano-Gómez, Pérez-Mesa and Giagnocavo (2015)
	Outome	Relationship related/ Firm performance	Operating in accordance with legal or regulatory requirements of an industry country	o2	Limoubpratum, Shee and Ahsan (2015);
	Outome	Firm performance	Portfolio diversification	o5	Luo (2005); Witek-Hajduk and Napiórkowska (2017)
	Outome	Relationship related/ Firm performance	Mitigation of negative environmental or social impact of the supply chain	o6	Fathalikhani, Hafezalkotob and Soltani (2020); Christ, Burritt and Varsei (2017)
	Outome	Firm performance	Decrease of risks in the supply chain	o9	Asadabadi and Miller-Hooks (2018); Galdeano-Gómez, Pérez-Mesa and Giagnocavo (2015)

References: A: Bengtsson and Kock (2014); B: Bengtsson and Raza-Ullah (2016); C: Dorn, Schweiger and Albers (2016); D: Devece et al. (2019); E: Gernsheimer, Kanbach and Gast (2021)

A highly competitive market is a significant driver that impacts the prices and costs of services in supply chains. Globalization also plays a role in influencing supply chain competitiveness (BRANDES et al., 2007; WALLEY; CUSTANCE, 2010). Another driver is the presence or lack of operational capacity, leading to the strategic decision to outsource from competitors instead of investing in production assets (BRANDES et al., 2007; ZACHARIA et al., 2019; KOTZAB; TELLER, 2003).

Trust serves as a driver, reducing control costs and fostering cooperative relationships (SHOCKLEY; FETTER, 2015; WILHELM, 2011; LIMOUBPRATUM; SHEE; AHSAN, 2015). Maintaining stable relationships with competitors is another frequent driver, minimizing the risks of price wars or intellectual property theft (CHRIST, BURRITT; VARSEI, 2017; WILHELM, 2011; LIMOUBPRATUM; SHEE; AHSAN, 2015). Governmental policies provide institutional safety for coopetition, particularly through anti-trust laws and support for industrial clusters (FATHALIKHANI; HAFEZALKOTOB; SOLTANI, 2020; HAFEZALKOTOB, 2017).

Regarding practices, cooperation in logistics activities, such as sharing transportation equipment, helps reduce operational costs. Cooperating in outsourcing final products or services can reduce manufacturing and knowledge costs. Knowledge and information sharing about manufacturing, demand management, and technology are part of coopetition practices. Price competition frequently occurs horizontally or vertically in supply chain coopetition. Competing in terms of differentiation, distribution channels, and service levels are also observed.

The outcomes of coopetition in supply chains mostly include operational and financial performance improvement, the ability to compete in a new or global market, and risk mitigation in the supply chain. Operational benefits include increased efficiency, reduced lead times, improved service levels, and improved product/process quality. Coopetition also enables entry into new markets and mitigates supply chain vulnerabilities and risks (BRANDES et al., 2007; ZACHARIA et al., 2019; CHRIST; BURRITT; VARSEI, 2017; HAFEZALKOTOB, 2017; PATHAK; WU; JOHNSTON, 2014; WILHELM, 2011; SEPEHRI; FAYAZBAKHSH, 2011; GALDEANO-GÓMEZ; PÉREZ-MESA; GIAGNOCAVO, 2015).

5.3.3 Coopetition among different supply chains

Based on data from the final sample of 130 papers in the systematic literature review, there has been a growing interest in coopetition within supply chains over the years. While the initial papers were published in 2002, nearly 80% of the studies have emerged since 2015. The majority of these studies have employed modeling/simulation and case studies as their predominant research methods, which is in contrast to previous literature reviews where modeling and simulation had lower representation. The significant presence of modeling and simulation studies can be partially attributed to the association with the "operations-management-manufacturing-process-positivism" nexus, which is commonly observed in traditional supply chain management studies (BURGESS; SINGH; KOROGLU, 2006).

Table 5.3 reveals the distribution of product-related supply chains in the coopetition studies. The electronic products, consumer goods/retail, agri-food, and fashion/luxury supply chains cover approximately 70% of the sample analyzed. The remaining 30% are concentrated in automotive, heavy, logistic service, medicine, port/naval, humanitarian, remanufacturing, air cargo, and construction supply chains.

Table 5.3 – Different supply chains in coopetition studies

Type of supply chain	Qty studies	%	Definition
Eletronic products and technology	35	27%	The electronics supply chain is characterized by different and complementary steps for electronic components. For example, there is the production of individual parts and semi-assembled and assembled electronic components, besides systems and applications. The electronics supply chain corresponds to products such as smartphones, communication devices, telecommunication hardware, or niche equipment (BERRY; TOWILL; WADSLEY, 1994).
Consumer goods and retail	18	14%	The consumer goods and retail supply chain is characterized by high demand volatility, seasonal demand patterns, frequent promotions, and a product lifecycle that has been shortening over the years (GÜNTHER; SEILER, 2009).
Fashion and luxury	17	13%	The fashion and luxury supply chains are well-known for short product lifecycles, high product variety, volatile and unpredictable demand, and many processes with long lead times and low flexibility. In terms of supply chain activities, there is the production of fibers and yarn (which encompasses the central suppliers of fabrics, which constitute most of the finished products), and distribution and sales (SEN, 2007). Adding to the complexity of the previous attributes, there are the particular elements of the luxury supply chain, such as country of origin or brand reputation, that were grouped with the fashion supply chain because of the popularity of luxury clothes and apparel in the studies analyzed (DEPEYRE; RIGAUD; SERAIDARIAN, 2018).
Agri-food	16	12%	The agri-food supply chain can be described in terms of the supply chain activities from farm to fork. As this supply chain involves farm and agricultural activities, the name is a combination of food and agricultural supply chains (TSOLAKIS et al., 2014; KUSUMASTUTI et al., 2016).
Automotive	9	7%	The automobile supply chain covers the design, development, manufacturing, and distribution of vehicles (GANDHI, 2021).
Heavy	6	5%	Associated with supply chain practices regarding steel, petrol, gas and fuel products (LU; KUO; LIN, 2013; JAFARNEJAD et al., 2020).
Logistics service	6	5%	Wang et al. (2014) define service supply chains as “supply chain systems in which the ‘products’ are pure services and physical products do not play a role.” A specific practice in this supply chain is associated with offering logistics services to support online sales. In this case, beyond considering the physical infrastructure (warehouses or handling equipment), an agent would provide the electronic platform for the commercialization of its competitor products, known as the marketplace, and cooperate in this channel of distribution, with potential costs savings (KARRAY, 2015; QIN; LIU; TIAN, 2020).
Medicine	5	4%	A focused supply chain of medicines among healthcare system composed by manufacturers, pharmacies, clinics, hospitals, hospital pharmacies and patients as end customers (IMRAN; KANG; RAMZAN, 2018)
Port/ Naval	5	4%	"The port supply chain refers to the dynamic, synergistic relationship established among suppliers, transporters, and final customers, with the port as the core, making use of information technology to integrate data, transport, business, and capital flows. " (GAO et al., 2022, p. 1)
Remanufacturing	5	4%	The remanufacturing supply chain is related to the "reverse supply chain," which focuses on the reprocessing of manufactured products through additional supply chain links, such as reverse logistics, recycling, and remanufacturers (CUI et al., 2022).
Humanitarian	4	3%	The humanitarian supply chain field involves the analysis and application of strategies and practices of the supply chain for humanitarian aid. Unlike market-based supply chains, in which there is a focus on business-as-usual, the humanitarian supply chain deals with adverse events, disruptions, and disasters caused by humans, nature, or other phenomena (FATHALIKHANI; HAFEZALKOTOB; SOLTANI, 2020; SCHIFFLING et al., 2020)
Air cargo/ aerospace	2	2%	"The air cargo supply chain consists of the physical and documentary flow of freight from origin to destination" (PÉREZ BERNAL et al., 2012, p.111).
Construction	2	2%	It is associated with the management of materials, documents, and supply chain practices along construction actors (suppliers, subcontractors, general contractor, designer/engineering/architect, owner) (LE et al., 2020).
Total	130	100%	

Regarding the frequent supply chains in Table 5.3, the following discussion highlights key elements observed in coopetition studies. Numerous studies have investigated coopetition in electronic product supply chains. A highly competitive, global, and innovative environment seems to facilitate coopetition. In such cases, specialization in certain manufacturing aspects or the dominance of specific technologies creates situations where supply chain actors source components or technology from their competitors.

A typical coopetition scenario in the consumer goods/retail supply chain involves a retailer designing its brand while the supplier handles production. However, despite the increased revenue for the supplier, the products made for the retailer may cannibalize the supplier's own offerings at the point of sale.

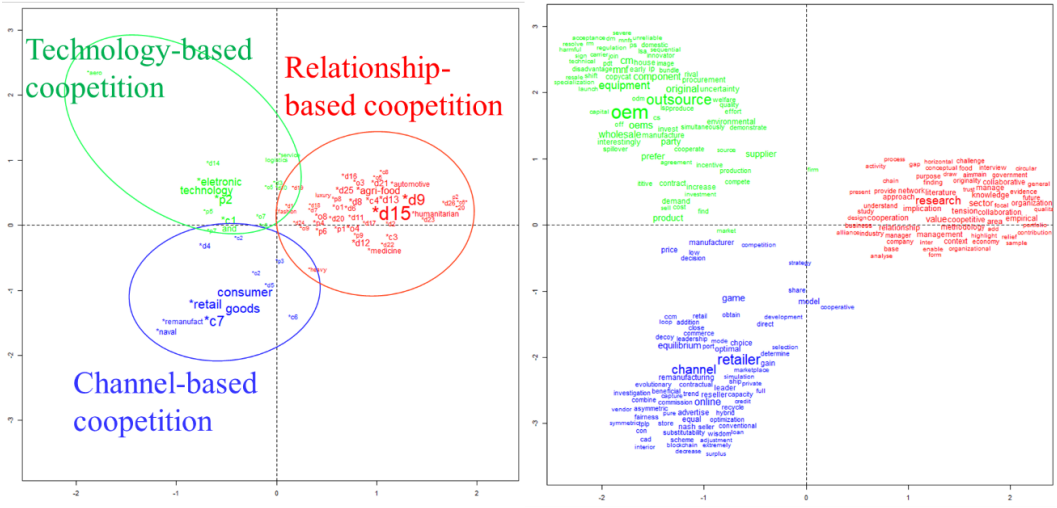
Coopetition is also present in the agri-food supply chain. Walley and Custance (2010) assert that the intensive use of resources in agricultural activities fosters cooperation between competitors in joint negotiations for purchasing fuels, fertilizers, or seeds and sharing equipment or technical assistance. However, coordinating multiple interests is challenging among coopetitors in this relationship (GALDEANO-GÓMEZ PÉREZ-MESA; AZNAR-SÁNCHEZ, 2016; FLANAGAN; LEPISTO; OFSTEIN, 2018; HANNACHI; COLENO; ASSENS, 2020).

In fashion/luxury supply chains, coopetition entails intense relationships among supply chain members. Small suppliers often need to operate at different supply chain levels with their own brands to boost revenue, which relies heavily on larger and more influential brands. Consequently, effectively managing tensions through separation, mediation, or integration into supply chain activities becomes crucial (DEPEYRE; RIGAUD; SERAIDARIAN, 2018). The formulation of a strategy that consistently delivers value to suppliers and retailers is also essential (RODRIGUES; MACCARI; RISCAROLLI, 2007). Conversely, some suppliers may consolidate power within the supply chain, which typically occurs in scenarios of raw material scarcity involving major global players (LECHNER et al., 2020).

RQ2: What specific drivers, practices, and outcomes characterize the management of different types of coopetition across diverse types of supply chains and sectors, and what is the relationship between them?

This sub-section presents the results of correspondence and descending hierarchical classification analysis, which revealed the three main types of coopetition in supply chains: tech-based coopetition, relationship-based coopetition, and channel-based coopetition. The results of the analysis are illustrated in Figure 5.2.

Figure 5.2 – Coopetition types for supply chains. Source: Authors based on Iramuteq results



Value net Coopetitors Relationship-based coopetition		Tech Coopetitors Technology-based coopetition		Channel Coopetitors Channel-based coopetition	
Cluster 1: 44.8%		Cluster 2: 26.8%		Cluster 3: 28.4%	
Word	χ^2	Word	χ^2	Word	χ^2
research	57.08	oem	127.55	retailer	78.74
value	34.6	outsource	82.14	channel	65.28
sector	28.07	equipment	51.89	online	45.09
cooperation	24.07	oems	43.44	equilibrium	36.61
tension	22.82	original	43.44	game	33.13
coopetitive	22.34	mnf	41.99	advertise	25.63
literature	22.16	cm	41.99	optimal	24.42
implication	22.15	component	39.24	equal	23.03
knowledge	21.52	wholesale	37.92	model	21.76
area	21.52	product	35.46	remanufacturing	18.97
empirical	21.52	party	32.26	price	18.83
relationship	21.13	supplier	29.43	nash	17.86
methodology	18.92	prefer	27.13	reseller	17.86
management	18.46	environmental	25.54	choice	17.55
collaboration	18.46	interestingly	22.18	manufacturer	16.99
Supply chains		**Supply chains**		**Supply chains**	
Agri-food fashion and luxury automobile heavy medicine humanitarian		eletronic products logistic services air cargo/ aerospace		consumer goods and retail remanufactured products port/naval	

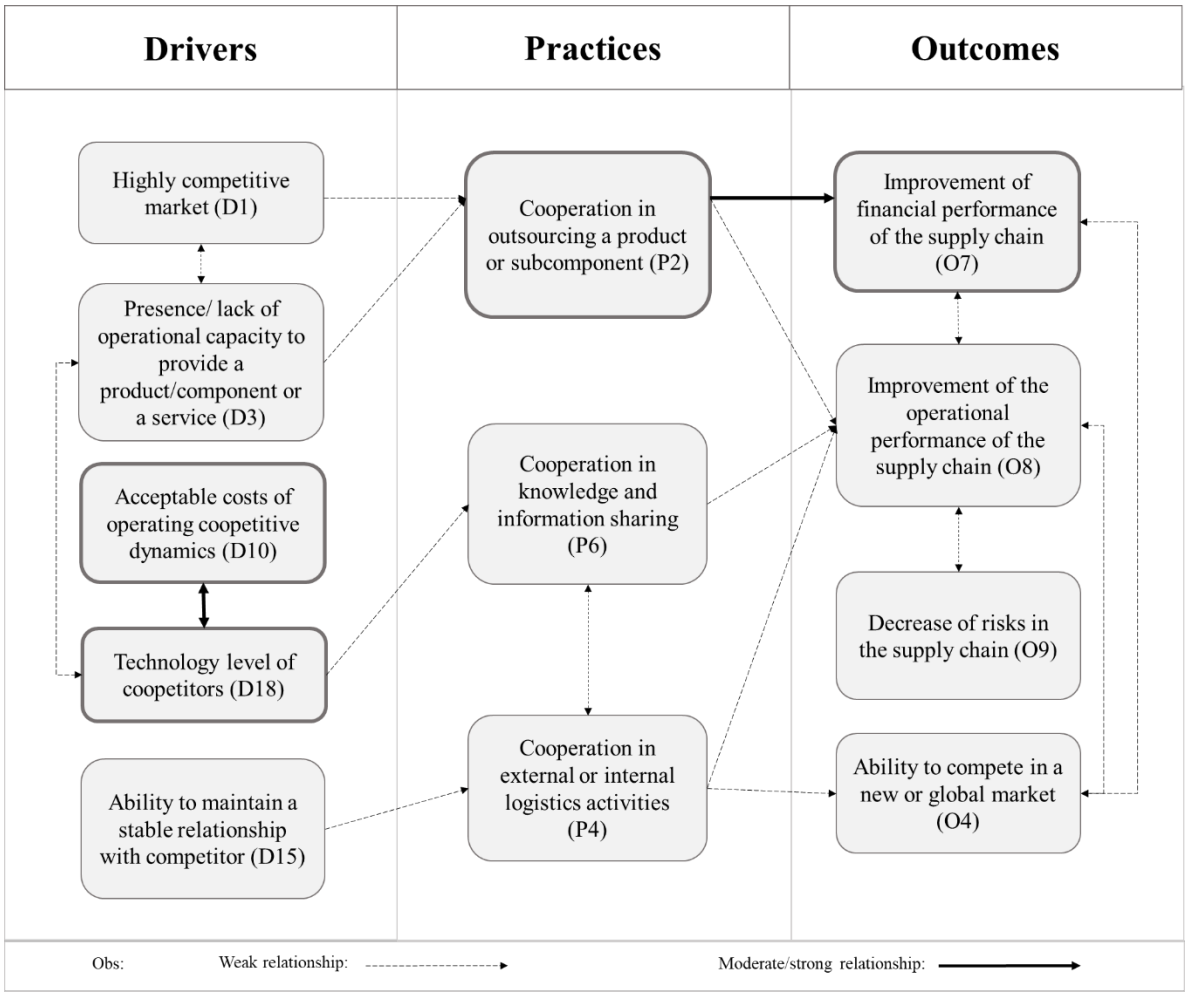
In the upper left corner of Figure 4.2, the three clusters are represented based on the codes identified in the scoping review (detailed in Table 1) and the types of supply chains identified in the studies. In the upper right corner, the clusters are separated based on the majority of the most frequent words in each one, detailed in the lower part of Figure 4.2, along with their respective chi-square scores obtained from the analysis in Iramuteq. Notably, despite the cluster analysis having grouped drivers, practices, and outcomes into a specific cluster, they may also be present in other clusters.

5.3.4 "Tech Coopetitors": Technology-based coopetition

Technology-based coopetition encompasses supply chains oriented toward innovation and technology It is a more rationalized type of coopetition, with a strong focus on financial performance and optimization. The three supply chains observed in this coopetition type were the electronics, air cargo/aerospace and service logistics supply chains.

The production outsourcing of final products, subcomponents, or services is typical in this coopetition type. The highly competitive market, the technology level of competitors, and the acceptable costs of operating coopetitive dynamics are examples of frequent codes in this type of coopetition. The main relationships among the most frequent codes identified in supply chain studies classified under this type of coopetition, as measured by Jaccard similarity indices, are depicted in Figure 5.3.

Figure 5.3 – Framework of drivers-practices-outcomes in technology-based coopetition



The predominance of production outsourcing can be seen as a result of a highly competitive market, well-known for its accelerated pace of innovation, which affects market dynamics and the pressure for differentiation (KWOK and LEE, 2015; PUN, 2015; ZACHARIA et al., 2019; HUANG et al., 2020). Two aspects seem necessary to drive the decision of outsourcing in technology-based coopetition. The first is a detailed analysis of costs, balancing between investing in research and development or outsourcing the production or service. In a highly rationalized scenario, costs are essential variables that drive decisions in these supply chains.

The second factor is the combination of presence and lack of capacity among competitors to form a viable partnership. As a result, a company may perform different roles in the supply chain simultaneously - as both a buyer and a supplier - with another supply chain actor. Therefore, when aiming to operate under acceptable coopetition costs, a supply chain actor may need to limit the number of requirements imposed by a customer

to the minimum necessary. This is because the customer may replicate these requirements when they play the role of supplier with the same actor in the supply chain. Consequently, a supply chain actor must carefully evaluate the costs of outsourcing production and managing the coopetitive relationship. From this, the following proposition was created:

Proposition 1a: In technology-based coopetition, a highly competitive market and the presence or lack of operational capacity to provide a product, component, or service can have a positive impact on cooperation in outsourcing a product or subcomponent. These factors also contribute to reducing operating costs in coopetitive interactions by refining the requirements for coopetition to a minimum viable level.

Furthermore, the technology level of coopetitors can impact tech-based coopetition by creating highly specialized actors who dominate one or more technologies and are mutually dependent. Therefore, a company should prioritize maintaining a stable relationship with its competitors to reduce the risk of losing its competitive position while cooperating in external or internal logistics activities where knowledge or information sharing is necessary for successful coopetition. This innovative dynamic highlights the importance of stable and mutually beneficial relationships between coopetitors in achieving success in tech-based coopetition.

The risk of information leakage or the stealing of intellectual property is a concern in this type of coopetition. Despite the existence, and current use, of contracts, there is always a possibility of gaps, or even breaches of contracts, which may result in a player in the market losing the leading technological position (CYGLER; SROKA, 2017; LIU; SUN; LIU, 2020; LU et al., 2020).

In addition, cooperation practices in this type of coopetition may create a mutual dependence between supply chain actors, which may limit decision-making independence in reacting to market changes because they usually do not dominate all technologies, knowledge, production steps or information about the distribution channel. Thus, a second proposition is the following:

Proposition 1b: In tech-based coopetition, cooperation in outsourcing a product or subcomponent, sharing knowledge, or providing logistic services in a high-technology environment can have a positive impact on short- and mid-term operational and financial performance. Such collaboration can also facilitate access to new and global markets. However, this may negatively affect the independence of the decision-making process.

For example, a particular cooperative practice in the logistics services supply chain involves providing logistics services to support online sales. In this case, in addition to considering physical infrastructure such as warehouses and handling equipment, an agent would also offer an electronic platform for commercializing its competitor's products, commonly known as a marketplace. As a result, the agent would cooperate in this distribution channel, potentially leading to cost savings (KARRAY; 2015; QIN; LIU and TIAN, 2020). However, the supply chain member who contracted the service stops strengthening their distribution channel and becomes more dependent on the supplier. In contrast, by creating a broad customer base, the supplier may lose visibility within their distribution channel and condition its revenue on the service provided.

Besides, it is relevant to mention that when an actor commercializes via a competitor’s platform, the competitor may access valuable demand information (including client profile, sales volume, etc.) more easily than via other practices. Therefore, how a competitor uses this information may be a problem if the competitor assumes opportunistic behavior. In the air cargo supply chain, maintaining a stable relationship with competitors is a necessary element to coopetition, in which a common practice is sharing demand forecasts to achieve optimized operations (NIU; DAI; ZHUO, 2019).

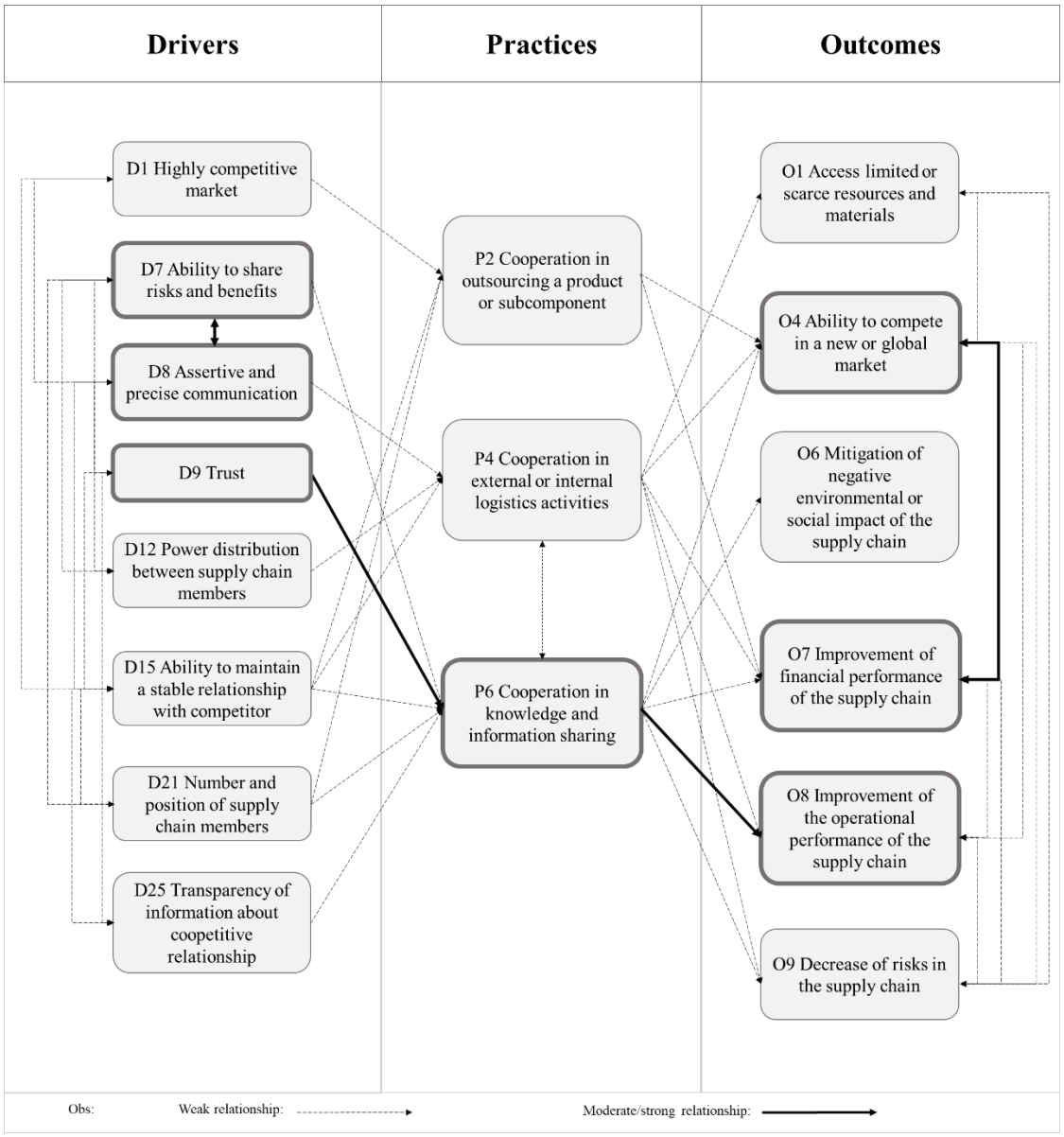
5.3.5 “Value Net Coopetitors”: Relationship-based coopetition

The relationship between actors is rooted in the origins of coopetition, based on the value net model. This map emphasizes the relationship between a company and its clients and suppliers, as well as its complementors and competitors (NALEBUFF and BRANDENBURGER, 1996).

Codes such as trust, assertive communication, willingness to share information, and transparency are common in this type of cooperation and reveal the relational nature of the phenomenon. The examples of supply chains presented below show how relational aspects permeate coopetitive relationships based on the specifics of each chain and how the management of these aspects contributes to the success or failure of coopetition in each case.

This form of coopetition encompasses six of the twelve supply chains identified, namely: agri-food, fashion/luxury, automobile, heavy industry, medicine, and humanitarian supply chains. Figure 5.4 illustrates the primary connections among the most commonly identified codes in supply chain studies categorized under this type of coopetition, as determined by Jaccard similarity indices

Figure 5.4 - Framework of drivers-practices-outcomes in the relationship-based coopetition



Cooperating for knowledge and information sharing is a frequent coopetitive practice in supply chain studies, which can occur in sharing good practices in manufacturing and quality (LI; LIU; LIU, 2011; WILHELM, 2011; TOMLINSON; FAI, 2013; YU-CHEN; XIAO-LAN, 2013; GALDEANO-GÓMEZ; PÉREZ-MESA; GIAGNOCAVO, 2015), in demand management or other supply processes (WAKOLBINGER; FABIAN; KETTINGER, 2013; FLANAGAN; LEPISTO; OFSTEIN, 2018; JIANG et al., 2020; PRIM; SARMA; DE SÁ, 2021), or in technological knowledge, which can be a co-investment (PATHAK; WU; JOHNSTON, 2014).

However, several factors were shown to be necessary for achieving the desired benefits, such as transparent communication, the ability to share risks and benefits, trust,

and the ability to maintain a stable relationship with competitors. Trust plays a vital role in social relations, reducing control costs and addressing uncertainties associated with sharing knowledge with competitors. This can be advantageous for various types of supply chains, resulting in savings. Previous works by Pache (2013) and Wakolbinger, Fabian and Kettinger (2013) have described the relationship between social ties and trust among coopetitors.

Maintaining a stable relationship with a coopetitor (which can be either an agent or a supply chain) is another frequent driver of coopetition in supply chains. Previous literature has highlighted various concerns regarding tensions in coopetitive relationships due to the paradoxical nature of cooperating with competitors, which can potentially lead to intellectual property theft (NALEBUFF; BRANDENBURGER, 1996; DAS; TENG, 2000; RAZA-ULLAH; BENGTSSON; KOCK, 2014; SCHRAGE; RASCHE, 2021). By maintaining a stable relationship, these risks can be reduced.

As a consequence, operational benefits for the supply chain may also be obtained from cooperative practices. For example, by sharing information about the supply chain process (KOVACS; SPENS, 2010; GALDEANO-GÓMEZ; PÉREZ-MESA; AZNAR-SÁNCHEZ, 2016; CYGLER; SROKA, 2017; FLANAGAN; LEPISTO; OFSTEIN, 2018; PAPAIOANNOU et al., 2020), actors from different supply chains may increase their efficiency (ZHANG; FRAZIER, 2011; RAWEEWAN; FERRELL JR, 2018; NIU et al., 2019), reduce lead times (LEJEUNE; YAKOVA, 2005), increase service levels (SHOCKLEY; FETTER, 2015; ASADABADI; MILLER-HOOKS, 2018), or improve product and process quality (YU-CHEN; XIAO-LAN, 2013; CHEN et al., 2018). From this previous discussion, a proposition is defined as follows:

Proposition 2a: In relationship-based coopetition, cooperation in knowledge and information sharing is linked to enhancing the operational performance of the supply chain. However, the attainment of these benefits hinges upon the presence of specific relational drivers. These drivers include trust, the ability to maintain stable relationships with competitors, transparent communication, and the ability to share risks and benefits. The purpose of these drivers is to mitigate the potential risks and unintended consequences that may arise from engaging in coopetition.

Another significant aspect of relationship-based coopetition is the distribution of power among supply chain members. The findings demonstrated a link between power distribution and the ability to share risks and benefits and assertive and precise communication.

Zacharia et al. (2019) and Lopes, Ferrarese and Carvalho (2017) raised concerns regarding interaction, knowledge sharing, and the collaborative development of products and technologies between buyers and suppliers. In certain supply chains, a particular actor often assumes a dominant role in initiating and maintaining coopetitive relationships with both its suppliers and the suppliers among themselves (WILHEM, 2011; WILHELM; SYDOW, 2018).

However, coopetition can result in counterproductive behaviors, such as opportunism, when a dominant supply chain member misuses their position to pressure suppliers into sharing information and knowledge with competitors. These counterproductive behaviors include using suppliers' information to negotiate discounts based on operational improvements gained through shared knowledge among coopetitors, and disseminating false information about competitors' performance to create a misleading perception of power imbalance.

Therefore, it is essential to establish a relevant approach for managing risks and benefits in relationship-based coopetition, along with effective communication management. Wilhelm and Sydow (2018) and Brandes et al. (2007) proposed coordinating strategies, including information isolation among suppliers during certain phases of the coopetition relationship, selecting cooperative suppliers, and making joint decisions regarding sharing coopetition outcomes to improve communication precision. From this, the following proposition was defined:

Proposition 2b: In relationship-based coopetition, power distribution among supply chain members influences their capacity to share risks/benefits and foster assertive and precise communication while cooperating in knowledge and information sharing. A significant power imbalance within the supply chain can lead to unintended coopetition interactions, negatively impacting operational performance and increasing the risk of supply chain disruptions.

Depeyre, Rigaud and Seraidarian (2018) revealed another aspect of power distribution among supply chain members. In some cases, small suppliers need to operate at other supply chain levels, usually with their own brands, to increase their revenue, which depends mainly on large and powerful brands. Thus, there is a constant need to manage tensions to separate, mediate, or integrate them in supply chain activities. It is also necessary to formulate a strategy that continues to offer value in their position as a supplier and a retailer (RODRIGUES; MACCARI; RISCAROLLI, 2007). On the order hand, some suppliers may concentrate power in the supply chain, but this usually occurs in a scenario of raw material scarcity and with large and global players (LECHNER et al., 2020).

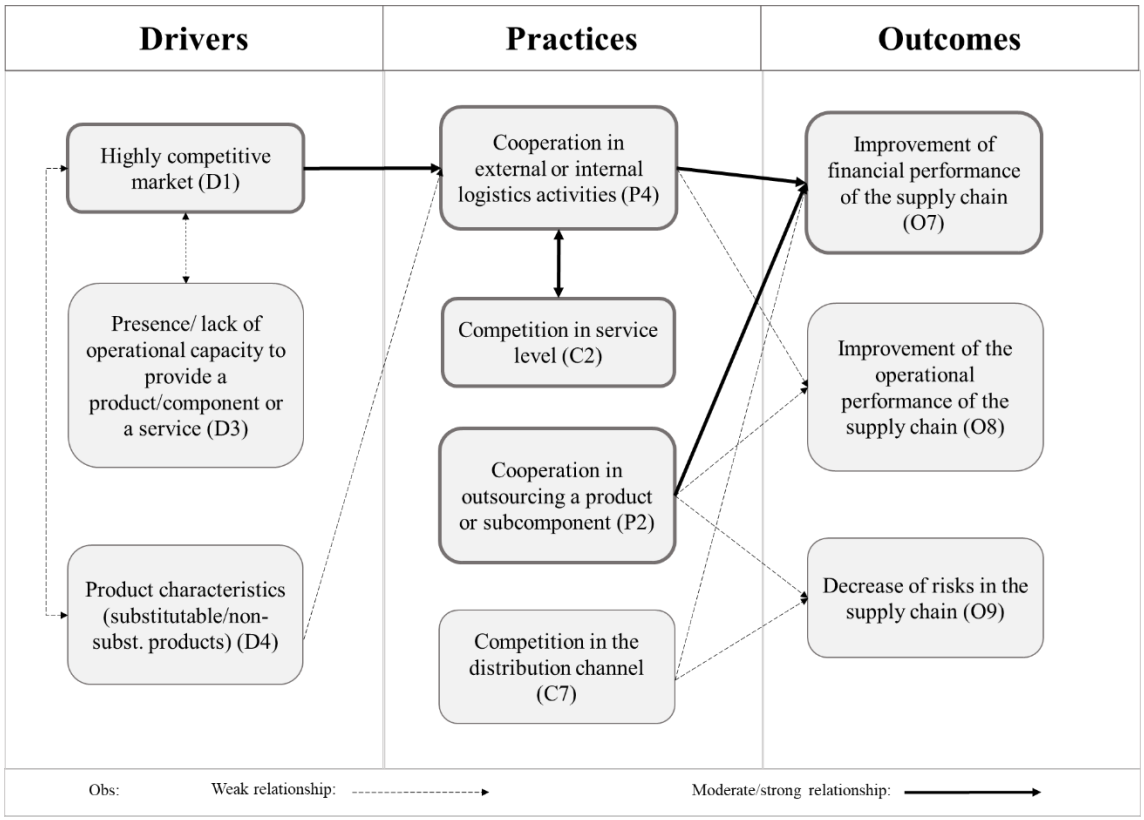
5.3.6 "Channel Coopetitors": Channel-based coopetition

Channel-based coopetition was the third type of coopetition in supply chains identified in the correspondence analysis. The choice for this denomination came from the convergent point between the supply chains comprising this class: consumer goods, remanufactured products, and port/naval supply chains.

This coopetition type has a distribution channel and product characteristics at its core because the cooperation–competition dynamics between the supplier and retailer occur across different channel types. Thus, downstream supply chain players play a relevant role in the type of coopetition by being responsible for retailers' distribution and order fulfillment.

Figure 5.5 shows the main relationships among the most frequent codes identified in the supply chain studies classified under this type of coopetition, as measured by the Jaccard similarity indices.

Figure 5.5 - Framework of drivers-practices-outcomes in the channel-based coopetition



Product characteristics - referring to substitutable and non-substitutable products and/or services - is a frequent driver in this type of coopetition. In the case of consumer goods, this characteristic arises from the relatively low differentiation between the products being sold (LI et al., 2018). For remanufactured products, the similarity in function between a new product and a remanufactured one may lead to this perception in the final consumer (CHEN; CHANG, 2013). Finally, in the case of port/naval supply chains, substitutability refers to the level of similarity between the services offered (SONG; CHEON; PIRE, 2015). From this, a proposition is made:

Proposition 3a: In a channel-based coopetition scenario, the nature of the product or the service - whether it is substitutable or remanufactured - can positively influence retailers' willingness to participate in a cooperative relationship with suppliers through logistics activities. This is due to the relatively low barriers to entry, which may be in the form of operational costs or external incentives, creating a highly competitive market.

A common coopetition practice in the consumer goods supply chain involves a relationship between a retailer and a supplier, in which a retailer designs its own brand and a supplier produces it. However, despite the increase in supplier revenue, the products made for the retailer may cannibalize the suppliers' products at the point of sale. On the other hand, although not investing in industrial equipment to produce its products, the retailer also assumes the risk of being dependent on the supplier in this coopetition scenario (NIU et al., 2020; LIU; WU; HONG, 2020). However, the results suggest that overall financial performance increases in this type of coopetitive relationship as the service level to end customers improves.

5.4 Conclusions

This study investigated coopetition in supply chains through three phases: a scoping review, a systematic review, and correspondence and contingency analysis using similarity indices. Coopetition in supply chains has demonstrated potential benefits for organizations, including improvements in operational and financial performance, increased innovation, and mitigating adverse environmental impacts (ZACHARIA et al., 2019; RAFI-UL-SHAN; GRANT; PERRY, 2022; MUNTEN et al., 2021).

However, previous studies have suggested that coopetition differs across supply chains (SEEPANA; PAULRAJ; HUQ, 2020; MUNTEN et al., 2021). This variability encompasses the dominance of specific drivers, practices, and expected outcomes of coopetition.

Through correspondence analysis, the codes and supply chain types were grouped into three main classes, revealing different types of coopetition in supply chains: technology-based coopetition, relationship-based coopetition, and channel-based coopetition. Based on these similarities, three frameworks were developed, and five propositions were formulated for further exploration in future research.

5.4.1 Implications for theory and practice

Although previous reviews have considered network and interfirm coopetition, a comprehensive typology that organizes coopetition topics through a supply chain lens is lacking. This study addresses this lack of reviews. First, studies on coopetition in supply

chains reveal a lack of qualitative approaches, which could be linked to the quantitative and positivist tradition of the supply chain field. Second, the electronics supply chain is the most commonly used example in coopetition studies, which indicates a preference in the literature for technological contexts rooted in a highly competitive environment. Furthermore, this study conducted a coding analysis of the drivers, practices, and outcomes present in studies of coopetition in supply chains. The study has also contextualized these elements from a supply chain perspective (beyond simply listing them). Finally, the typology proposal for coopetition in supply chains contributes to creating a way of capturing and describing coopetition and the propositions derived from the frameworks to empirically explore the evidence observed in the literature.

Regarding contributions to practice, the proposed typology should help practitioners and decision-makers appraise the potential outcomes for their supply chains and define competencies, profiles, and abilities at the multiple levels required to manage the practices observed in coopetition in supply chains. Furthermore, in the context of controversial perceptions regarding cooperating with a rival, the typology and the frameworks should help managers justify coopetition adoption to other professionals based on its potential and expected beneficial outcomes. Thus, the proposed typology and frameworks can be used by practitioners as a roadmap to address each characterizing element and increase the chances of coopetition success.

5.4.2 Research limitations

Finally, this study has limitations. First, there is a limitation in the number of academic databases chosen for the search stage of the systematic literature review. There is also a limitation regarding the coverage of the model, which was made considering the available literature on the topic, which excludes supply chains that have not yet published studies. Therefore, future studies can empirically validate coopetition configurations, as well as investigate how other supply chains could fit into this proposal.

6 COOPETITION AMONG MULTIPLE SUPPLY CHAINS: AN INTRAORGANIZATIONAL ANALYSIS OF MANAGEMENT MECHANISMS AND RELATIONAL COMPONENTS

Research Paper 5: Empirical Research.

The coopetition stream.

Note for the reader: At this point, I conduct the first empirical study within the coopetition stream, considering three manufacturing companies. Based on competitive events, I examine which supply chains are in dispute and, through the analysis of the content present in the cases, develop the concepts of "core" and "non-core" supply chains within organizations as a relevant unit of analysis for studying coopetition from the perspective of multiple supply chains. Thus, from this point on, "core" and "non-core" supply chains are taken as a category of supply chains subject to coopetition.

6.1 Introduction

Coopetition can be seen as a blend of competition and cooperation. Originally conceived as a strategy that opposes the logic of annihilating competition, coopetition advocates that in specific situations, it is more competitive to ally with a competitor rather than eliminate it from the market. Given this characteristic, coopetition was initially conceptualized as a strategy beyond the organization's boundaries, gaining prominence in practice and theory through interactions between companies, namely, at the inter-organizational level (NALEBUFF; BRANDENBURGER, 1996; BENGTSSON; KOCK, 2000).

Coopetition has predominantly been studied from the perspective of inter-organizational analysis, which considers the relationship between two or more companies. However, it has also been observed within the internal context of companies, referred to as intraorganizational coopetition, intra-firm coopetition, or internal coopetition. Intraorganizational coopetition from individuals, workgroups, functions, and business units has been investigated (BENGTSSON; RAZA-ULLAH, 2016; BÜHLER

et al., 2023; MIERZEJEWSKA; ALUCHNA; TOMCZYK, 2023; GERNSHEIMER; KANBACH; GAST, 2021). Although most coopetition studies are still dedicated to the inter-organizational level, intraorganizational coopetition has experienced growth in recent years (CORBO et al., 2023; XIE et al., 2023).

The same rationale applies to coopetition when it is considered in the supply chain context. This theme has been explored from an inter-organizational perspective, viewing the supply chain as a collection of links and connections, as demonstrated by previous studies (CARTER; ROGERS; CHOI, 2015; KATSALIAKI; KUMAR; LOULOS, 2023; LAMBERT; ENZ, 2017). Over the years, elements such as governance (RAI; SURANA, 2022, SÉRAN; FERNANDEZ; CHAPPERT, 2023), trust (LASCAUX, 2020), tension (ROUYRE; FERNANDEZ, 2019; GERNSHEIMER et al., 2024; GUO et al., 2023), coopetition capabilities (RAI; GNYAWALI; BHATT, 2023), knowledge management (GAST et al. 2019; ROUYRE; FERNANDEZ, 2019), integration strategies, separation strategies, and mediation (TELG; LOKSHIN; LETTERIE, 2023), among others, have been identified as relevant to coopetition management in the literature investigating this topic (BENGTSSON; RAZA-ULLAH, 2016; CHIAMBARETTO; MASSÉ; MIRC, 2019; GERNSHEIMER; KANBACH; GAST, 2021; MEENA et al., 2022; ROUYRE; FERNANDEZ; ESTRADA, 2024; TELG; LOKSHIN; LETTERIE, 2023).

However, it is equally pertinent to investigate Coopetition from an intraorganizational viewpoint, considering the presence of multiple supply chains within a single organization. This approach enables a deeper understanding of how collaboration and competition can coexist and manifest both between different organisations and internally, influencing the dynamics and efficiency of supply chains. The concept of multiple supply chains advocates that an organization is not solely part of a single supply chain but rather a network composed of several supply chains related to the product or agent (GATTORNA, 2006; CARTER; ROGERS; CHOI, 2015).

Existing research has highlighted that exploring different levels of coopetition within the intraorganizational context presents a rich area for study with significant potential to impact business outcomes. Depeyre, Rigaud and Seraidarian (2018) mention the case of competition between brands within a fashion conglomerate for distribution channels or operational resources. The same occurs for coopetition between brands, as pointed out by Chiambaretto, Gurău and Le Roy (2016) and by Chiambaretto, Massé and Mirc (2019).

In Song, Lee and Khanna (2016), there is an association between a broad scope of products and relationships with multiple value chains. Schweizer et al. (2023) explored the role of headquarters in coopetition while Mierzejewska et al. (2023) investigated coopetition in corporate groups. Additionally, Amata et al. (2021) investigated the production capacity allocation process within the context of intraorganizational coopetition associated with the supply chain. These authors reinforce the need for future studies to keep investigating other characteristics of coopetition at this level, highlighting the role of conflict management and the potential impact on operational efficiency.

However, the successful management of intraorganizational coopetition remains an open theoretical gap and a challenge in practice (CHIAMBARETTO; FERNANDEZ; LE ROY, 2022). Therefore, understanding how the coopetitive process unfolds can contribute to achieving the expected outcomes. Broadly, the factors influencing coopetition can be categorized into management mechanisms and relational components (BENGTSSON; RAZA-ULLAH, 2016; BOUNCKEN et al., 2015; DORN; SCHWEIGER; ALBERS, 2016; GERNSHEIMER; KANBACH; GAST, 2021). Management mechanisms cover elements such as governance models, collaboration, knowledge management, value creation, and value capture. This concept is introduced in the current study as a comprehensive framework for understanding how coopetitive processes are facilitated through various structures, strategies, agreements, and actions that underpin these interactions.

On the other hand, relational components address all aspects related to the interactions and relationships between entities engaged in coopetition, including trust, opportunism, tension, and emotional dynamics. This dichotomy offers a structured lens through which the dynamics of coopetition can be examined, shedding light on both the procedural and interpersonal facets of such collaborations. However, understanding these elements is limited, albeit central, for managing intraorganizational coopetition within the supply chain. Therefore, seeking to better understand how management mechanisms and relational components help manage coopetition in multiple supply chains, the present study raises the following question: *How do management mechanisms and relational components shape coopetition dynamics among multiple supply chains?*

As a result, this study exploratorily delves into examining, for the multiple supply chains: the management mechanisms and the relational components. Based on the results,

this study contributes to revealing how management mechanisms and components occur within intraorganizational coopetition among multiple supply chains.

The primary aspect reveals the concept of the organization's core and non-core supply chains, which are associated with the core competence idea. This category of supply chains reflects power asymmetry among multiple supply chains and proves fundamental for observing internal coopetitive dynamics. Additionally, intraorganizational coopetition among multiple supply chains arises from resource scarcity. This aspect reinforces the notion that unlike inter-organizational coopetition based on market customer competition (CHIAMBARETTO; FERNANDEZ; LE ROY, 2022), intraorganizational coopetition – occurring in various forms such as among units, groups, functions, and multiple supply chains – appears to converge around resource scarcity.

Another point of convergence with other intraorganizational studies involves recognizing that internal coopetition is conceptualized based on a type of relationship rather than as a formal strategy, as observed at the inter-organizational level. However, it occurs on a cooperative rather than competitive basis. Nonetheless, viewing coopetition as a deliberate strategy rather than a consequence of various factors may also enable organizations to improve operational efficiency at the intraorganizational level.

From a practical standpoint, by investigating how intraorganizational coopetition occurs, this study presents relevant dimensions to be considered through management mechanisms and relational components. This aspect becomes valuable for practice because it is observed that, despite the existence of coopetition and attempts to manage it, the way it is actually managed internally by actors associated with supply chain function within organizations has proven insufficient, as it does not comprehensively incorporate the necessary management mechanisms and relational components. Thus, this study invites practitioners to revise internal processes and structures to consider the specificities of coopetition among multiple supply chains.

The structure of this paper is, as follows: Section 6.1 provides an introduction to the research topic, highlights its significance and lays out the research questions. Section 6.2 offers a comprehensive literature review, presenting an analysis of the debate between inter- and intraorganizational levels, an overview of intraorganizational studies, and the coopetition process and its management mechanisms and relational components from

inter-organizational level of analysis. In Section 6.3, the details of the research method employed in our research are presented, and the data collection and analysis techniques are outlined. Section 6.4 presents the empirical findings and their implications, while Section 6.5 discusses the results in the context of the literature and offers seven propositions. Finally, Section 6.6 concludes the paper by summarizing the key findings, their broader implications, and suggesting potential avenues for future research.

6.2 Literature Review

The literature review section is organized into three main sub-sections: an analysis of the debate between inter- and intraorganizational levels, an overview of intraorganizational studies, and the coopetition process and its management mechanisms and relational components from inter-organizational level of analysis.

6.2.1 From Inter-organizational to Intraorganizational Coopetition: An ongoing debate

Over the years, the understanding of coopetition has been linked to what Bengtsson and Kock (2014) synthesized as the condition where organizations compete in certain activities, markets, and products while simultaneously cooperating with others. However, consensus regarding coopetition beyond this view of combining competition and cooperation remains challenging (BENGTSSON; RAZA-ULLAH, 2016). This challenge arises from the fragmented and dispersed development of the theoretical field, leading to the presence of several literature reviews dedicated to organizing knowledge and providing a clearer understanding of knowledge development (e.g., BENGTSSON; KOCK, 2014; BOUNCKEN et al., 2015; BENGTSSON; RAZA-ULLAH, 2016; DORN; SCHWEIGER; ALBERS, 2016; CHIM-MIKI; BATISTA-CANINO, 2017; GERNSHEIMER; KANBACH; GAST, 2021).

Indeed, coopetition is a concept used across various disciplines, ranging from applications involving geosocial organizational networks (ZHAO; WANG; WANG, 2022) to experimental psychology studies (KELLER; LOEWENSTEIN; YAN, 2010). Even within the organizational context, distinguishing between levels of analysis has posed challenges for consolidating concepts associated with coopetition. Building on this

framework, Chiambaretto, Fernandez and Le Roy (2022) approached the conceptualization of coopetition through the lens of Lakatosian research programs. They outlined specific premises defining the essential characteristics of coopetition within its "hard core." This approach delineates clear boundaries for what is considered to be within the scope of coopetition, thereby providing a structured basis for academic inquiry into the phenomenon.

In this regard, what characterizes coopetition at its core is the simultaneous occurrence of cooperation and competition, intense competition in critical markets among coopetitive companies, and intense cooperation in decisive activities or markets among coopetitive companies (CHIAMBARETTO; FERNANDEZ; LE ROY, 2022). On the other hand, the protective belt comprises the following themes: limits of coopetition, coopetition outcomes, and social impacts of coopetition. Specifically, with regard to the primary focus of this research on the boundaries of coopetition, the inquiry posed by Chiambaretto, Fernandez and Le Roy (2022) prompts consideration: "Can coopetition extend to scenarios where actors compete for objectives beyond customers?".

Indeed, this thought-provoking question is relevant for the coherence of coopetition development as it directly deals with how studies fit within the so-called intraorganizational coopetition. Traditionally, the focus of coopetition within intraorganizational coopetition does not necessarily revolve around customers. Instead, it often involves the rivalry for scarce resources (financial, knowledge, etc.) (TSAI, 2002; LUO, 2005; LUO; SLOTEGRAAF; PAN, 2006; GHOBADI; D'AMBRA, 2012; SERAN; PELLEGRIN-BOUCHER; GURAU, 2016; CHIAMBARETTO; MASSÉ; MIRC, 2019). What lies at the core of intraorganizational coopetition? Is it inherently linked to inter-organizational coopetition, or should it be recognized as a distinct field, perhaps under a different name? These inquiries are rooted in Chiambaretto, Fernandez and Le Roy's (2022) initial question; however, further evidence is required to validate their significance.

Systematically organized concepts associated with coopetition emerge from literature reviews that have delineated potential avenues for exploring this relational paradigm. For instance, Bengtsson and Raza-Ullah (2016) present a model of drivers, processes, and outcomes by distinguishing two schools of thought: actor-based and activity-based. However, while the framework of drivers, processes, and outcomes as a theoretical framework has been observed in other cases (e.g., GERNSHEIMER;

KANBACH; GAST, 2021), the propagation of the actor-based or activity-based school of thought has been less evident in subsequent studies.

The evolution of phases and themes in coopetition by Dorn, Schweiger and Albers (2016) reveals a consistent framework addressing coopetition issues presented so far. This structure encompasses sequential coopetition through game theory or other models (e.g., CHEN et al., 2018; NIU et al., 2019) and the representation of themes and their relationships within the coopetitive context. Similarly, Gernsheimer, Kanbach and Gast (2021) seem to follow the path laid out by Dorn, Schweiger and Albers (2016) by presenting a panorama of coopetition themes termed as dimensions of coopetition. These include antecedents, execution, interaction, and the outcomes of coopetition, while maintaining the pillar of coopetition analysis levels similar to all the previously mentioned reviews.

However, a noteworthy observation arising from these reviews, aimed at establishing the fundamental tenets of coopetition (CHIAMBARETTO; FERNANDEZ; LE ROY, 2022), is the dilemma regarding maintaining a comprehensive concept that can flexibly accommodate various levels of analysis. This is exemplified by studies such as Dorn, Schweiger and Albers (2016), which delineate initiation, management, and evaluation phases of coopetition, and Bengtsson and Raza-Ullah (2016), which elaborate on drivers, processes, and outcomes of coopetition. Alternatively, there is an effort to seek common ground on concepts for advancing from a shared and less subjective understanding, as Gernsheimer, Kanbach and Gast (2021) strive to detail second-order themes.

This academic endeavor to construct understanding grapples with the variations in coopetition observed across different levels of analysis. For instance, consider the comparison between intraorganizational coopetition and inter-organizational coopetition, examining some themes brought forward by Gernsheimer, Kanbach and Gast (2021). While some themes seem highly relevant across different levels of analysis based on available literature (e.g., governance and collaboration models, tension, emotions, etc.), others appear to diverge, such as partner selection and reputation. These themes are scarcely observed within intraorganizational coopetition studies (TSAI, 2002; LUO, 2005; LUO; SLOTEGRAAF; PAN, 2006; GHOBADI; D'AMBRA, 2012; SERAN; PELLEGRIN-BOUCHER; GURAU, 2016; CHIAMBARETTO; MASSÉ; MIRC, 2019), which generally deal with contexts where such situations are either given – the

organization has a limited set of units with sufficient characteristics for cooperative interaction – or are less relevant – the possibility of one unit having a better or worse reputation than another has not been observed as a coopetition antecedent.

6.2.2 An overview of intraorganizational coopetition studies

Intraorganizational coopetition has been a relatively underexplored area of study within the coopetition literature. Bengtsson and Raza-Ullah (2016) highlighted this gap in the coopetition field. Since the term became popular in the 1990s until around 2015, they identified fewer than a dozen studies dedicated to intraorganizational coopetition (TSAI, 2002; LUO, 2005; LUO; SLOTEGRAAF; PAN, 2006; LOCH; GALUNIC, SCHNEIDER, 2006; GHOBADI; D'AMBRA, 2012A; GHOBADI; D'AMBRA, 2012B; GHOBADI and D'AMBRA, 2013).

Similarly, Dorn, Schweiger, and Albers (2016), in their systematic review, found that out of 169 selected studies, only 5% focused on intraorganizational analysis, often also referred to as intra-firm or internal cooperation. Even in recent reviews by Gernsheimer, Kanbach and Gast (2021) and Meena, Dhir and Sushil (2022), this proportion remains relatively low compared to the number of inter-organizational studies within the topic.

Despite this, several authors have emphasized the need for deeper investigation at this level of analysis. There is an ongoing debate about the complexity of intraorganizational coopetitive relationships. While some authors argue that these relationships are more complex due to internal power dynamics (BENDING et al., 2018; MIERZEJEWSKA et al., 2023), others suggest they may be less complex because they occur within the organization, where formal hierarchies and informal relationships may alleviate some of the contingencies present in inter-organizational coopetition (Xie et al., 2023).

However, even for central topics such as the relationship between coopetition and innovation, understanding at the intraorganizational level remains limited (CHEN et al., 2021; CORBO et al., 2023; GUO et al., 2023; SONG; LEE; KHANNA, 2016; STRESE et al., 2016). The same applies to tensions involved in coopetitive relationships (CHIAMBARETTO; MASSÉ; MIRC, 2019; GERNSHEIMER et al., 2024; SÉRAN;

FERNANDEZ; CHAPPERT, 2023; TIDSTRÖM, 2014), indicating an urgent need for investigation into intraorganizational coopetition.

In general, studies on intraorganizational coopetition are organized into three main levels: between units within the same organization, functional areas, and workgroups. In terms of inter-unit coopetition, Tsai (2002) highlights the role of formal and informal coordination mechanisms in sharing internal knowledge, contributing to internal capability improvement, increased synergies, and collective learning. Luo (2005) expands on knowledge sharing, including financial gains from economies of scale that effective business unit coordination can bring. Séran, Fernandez and Chappert (2023) investigates the roles of controls in mitigating tensions between business units from a management-control perspective.

When it comes to coopetition between functional areas, the theme of knowledge sharing remains prominent, alongside potential financial benefits and market understanding for the organization (LUO; SLOTEGRAAF; PAN, 2006). Tsai and Hsu (2014) explore the potential benefits of coopetition for new product development, considering the balance between competition and cooperation.

Regarding coopetition among workgroups, one aspect addressed is task effectiveness within a competitive organizational context (LIN et al., 2010). Ghobadi and D'Ambra (2012a), Ghobadi and D'Ambra (2012b), Ghobadi and D'Ambra (2013), and Ghobadi, Campbell and Clegg (2017) identified five dimensions of coopetition within software development teams, which managers can explore to identify and subsequently coordinate coopetitive behaviors. Homburg et al. (2023) describe team coopetition in presence of incentives, focusing on the impact of environment and forms of advice exchange. Gernsheimer et al. (2024) combine a cross-level analysis to investigate coopetition formation teams in multinationals.

In conclusion, the focus of intraorganizational coopetition has largely been on innovation, knowledge sharing, technology, and new product development, mirroring established inter-organizational interests. However, other central themes such as tension mitigation, coping with paradox, and the impact of coopetition on companies and supply chains receive limited empirical evidence in the intraorganizational context.

6.2.3 Challenging, dynamic and complex: the management mechanisms and relational components present in the coopetitive process

The coopetitive process – as one of the central elements in the theoretical framework for coopetition – is described by Bengtsson and Raza-Ullah (2016) as challenging, dynamic, and complex. It is dynamic because it dynamically configures and reconfigures interactions and activities, oscillating between the poles of the coopetition continuum. This process is complex due to the contradictory and paradoxical nature of the relationship, which is surrounded by numerous tensions and conflicting demands that need to be managed. This is challenging due to the difficulty in being able to achieve the potential expected gains.

In this latter aspect, Chiambaretto, Fernandez and Le Roy (2022) highlight that successfully managing coopetition remains a gap to be resolved, with paths pointing towards multiple approaches rather than simply one definitive form or recommendation. In this endeavor, the themes formulated by Gernsheimer, Kanbach and Gast (2021) correspond to a promising starting point for exploring ways to manage intraorganizational coopetition. However, these themes are closely associated with the inter-organizational level. They are presented in Tables 6.1 and 6.2.

Similarly, the literature has pointed out that within the coopetitive process, both management mechanisms (Table 6.1) – which encompass elements such as governance models, collaboration, knowledge management, value generation, and appropriation – and relational components (Table 6.2) – trust, opportunism, tension, and emotion – need to be managed to obtain the potential benefits of coopetition. The idea of management mechanisms is introduced in this study as an umbrella concept for how the coopetitive process is executed in terms of the structures, strategies, contracts, and activities that support the process. In turn, relational components encompass all aspects associated with the interaction and relationship between the participating agents of coopetition.

Governance and collaboration models are management mechanisms often mentioned in studies of inter-organizational coopetition (GERNSHEIMER; KANBACH; GAST, 2021). Governance models refer to the structures, processes, and systems that support the implementation of coopetition, facilitating decision-making, accountability, and performance measurement systems (FERNANDEZ; CHAPPERT, 2023). Generally, they are divided into transactional and relational models.

Transactional governance models—often regarded as control mechanisms by some authors (FERNANDEZ; CHIAMBARETTO, 2016; SÉRAN; FERNANDEZ; CHAPPERT, 2023)—have contracts as their central element. Contracts define the legal responsibilities between coopetitors and their obligations based on consensus on clauses deemed necessary by both parties (RAI; SURANA, 2022). Contracts serve various functions in coopetitive relationships. They mitigate the risks of opportunistic behavior among rivals (YU, 2019). From a resource-based view perspective, they can contribute to protecting the organizations' core competencies (BOUNCKEN et al., 2015) and can be seen as forms of control and conflict resolution (FERNANDEZ; CHIAMBARETTO, 2016; RICCIARDI et al., 2022). Other transactional governance mechanisms involve formal procedures and structures that enable the formation and implementation of coopetitive strategy (FERNANDEZ; CHIAMBARETTO, 2016).

On the other hand, relational governance mechanisms are seen as complementary ways to foster cohesion among members around the execution of the coopetitive process (GERNSHEIMER; KANBACH; GAST, 2021). Thus, based on trust, commitment, shared relational norms, and relational governance also helps to control opportunistic behaviors, reduce uncertainties, and collectively align interests (WALLENBURG; SCHÄFFLER, 2014; YU, 2019). Relational mechanisms have become fundamental management tools for interactions between groups and complex and intricate networks of companies, within which the scope of contracts may be limited (FERNANDEZ; CHIAMBARETTO, 2016; GERNSHEIMER; KANBACH; GAST, 2021).

Table 6.1 – Management mechanisms of coopetition

Cod.	Theme	Description/ examples	Selected references
Management mechanisms	Governance and collaboration models	Governance models refer to the structures, processes, and systems put in place to ensure effective decision-making, accountability, and performance measurement systems of coopetition. It is given by two distinct forms: Transactional and relational governance. Collaboration models refer to the shared resources and capabilities that are formalized in coopetitive engagements, aligning with the overall strategy.	Bouncken, Clauß and Fredrich (2016); Gernsheimer, Kanbach and Gast (2021), Rai and Surana (2022); Rouyre, Fernandez and Estrada (2024).
	Knowledge exchange and management	Knowledge exchange and management in coopetition means the balance between knowledge sharing and protecting to prevent knowledge leakage or loss of intellectual property	Estrada, Faems and de Faria (2016); Gast et al. (2019); Gernsheimer, Kanbach and Gast (2021),
	Value creation and appropriation	Value creation is "growing the pie" and occurs when competitors create more value together from a coopetitive engagement than they could achieve alone as competitors Value appropriation defines how the created common value is captured and distributed among the individual partners	Brandenburger and Nalebuff, (2011); Gernsheimer, Kanbach and Gast (2021), Volschenk, Ungerer and Smit (2016)
	Separation and integration Mediation	Organizational design principles to manage coopetitive tensions: separation, integration and mediation. Separation: spatial or functional separation of competitive and cooperative activities; Integration: convergence of coopetitive paradoxes; Mediation: Third-party member designated to mediate the interaction between rivals	Brandes et al. (2007); Gernsheimer, Kanbach and Gast (2021); Chiambaretto, Fernandez and Le Roy (2022)

The information and knowledge exchange among companies during coopetition is an activity subject to management through specific mechanisms of control and sharing (GERNSHEIMER; KANBACH; GAST, 2021). Gast et al. (2019) provide an overview of understanding this mechanism. First, knowledge sharing involves making information or knowledge available to the coopetitor. Similarly, protection does not involve allowing a type of knowledge to be accessed by the coopetitor.

However, this is a challenging task, especially in coopetitive relationships in which there is power asymmetry among supply chain members, as weaker members have less capacity for protection than do those with greater power concentration (GAST et al., 2019). An example is the automotive case described by Wilhelm and Sydow (2018), in which automakers - who hold more power within the supply chain – foster a coopetitive process with their suppliers by sharing best practices with their competitors.

Another aspect of this mechanism concerns the type of knowledge: general or specific. In the first case, it would correspond to more general information about the industry and business that, theoretically, would not generate significant harm to the companies. Conversely, if shared with competitors, specific knowledge would cause a negative impact on the organization - mainly due to the leakage of confidential information or intellectual property (ESTRADA; FAEMS; DE FARIA, 2016; GAST et al., 2019). Finally, regarding the forms of knowledge protection, legal instruments such as contracts, patents, and intellectual property management are examples of mechanisms employed to protect critical information. In parallel, technology can also contribute to mitigating the risk of leakage through cybersecurity systems (GAST et al., 2019).

The creation and appropriation of value are the management mechanisms discussed in sequence. In popularizing the concept of coopetition, the idea of "growing the pie" illustrated in a simple way how the alliance of competitors at certain times and activities could benefit businesses without constituting an illegal practice in the market arena and could promote market expansion (BRANDENBURGER; NALEBUFF, 1996; XIE et al., 2023). One way to identify opportunities for creating global value from a coopetitive strategy is by seeking synergies between competitors. In this sense, antecedents such as partner fit become essential for envisioning opportunities to combine resources and capabilities (GERNSHEIMER; KANBACH; GAST, 2021; RITALA; TIDSTRÖM, 2014).

Additionally, value creation has a temporal dimension. This characteristic means that it can evolve over time based on how coopetitive interaction is managed and subject to changes stemming from variations in the level of cooperation or competition in these interactions (RITALA; TIDSTRÖM, 2014). In contrast to value creation, there is individual value appropriation. Value appropriation refers to the allocation of resources generated among partners as a result of coopetitive dynamics (GERNSHEIMER; KANBACH; GAST, 2021).

In this sense, value appropriation becomes a battleground that needs to be managed, as coopetitors seek to maximize the capture of value generated in coopetition (RITALA; TIDSTRÖM, 2014). Thus, value appropriation becomes a potential source of conflicts and tensions. However, obviously, the distribution of value among coopetitors is not a simple task, as the contribution of each member within coopetition may not be the same. Defining how much value is appropriated by each member and how it is done,

remains a challenge. This phase can result in either feedback on the process and maintenance of gains or the destruction of value created from poorly managed tensions and conflicts (GERNSHEIMER; KANBACH; GAST, 2021; RITALA; TIDSTRÖM, 2014; RITALA; HURMELINNA-LAUKKANEN, 2018; SÉRAN; FERNANDEZ; CHAPPERT, 2023).

Finally, the last group included within the mechanisms of coopetition management involves the principles of integration, separation, and mediation. Separation involves strategies that spatially or functionally limit interactions between coopetitors (GERNSHEIMER; KANBACH; GAST, 2021; CHIAMBARETTO; FERNANDEZ; LE ROY, 2022).

The concept of *chambre separée*[1] introduced by Brandes et al. (2007) exemplifies a form of separation where, from one actor, multiple projects are managed individually with partners who are competitors with each other. This actor, acting as a consolidator and mediator, defines the information that will be shared to achieve economies of scale and which will be protected to respect intellectual property among competitors. Integration, on the other hand, involves activities or resources shared among coopetitors. Lastly, mediation generally corresponds to a third party designated to mediate the interaction between rivals, reducing tensions between them (GERNSHEIMER; KANBACH; GAST, 2021; CHIAMBARETTO; FERNANDEZ; LE ROY, 2022).

Trust is a central relational component in business relationships and has been widely studied over the years (HUANG; WILKINSON, 2013). Considering coopetition as a form of relationship, it is not uncommon to expect trust to play a central role in this case as well. Since seminal studies on the topic (BENGTSSON; KOCK, 2000), trust has been present as a preliminary component for the selection of partners for coopetition, potentially contributing to mitigating power asymmetries among agents (CZAKON; CZERNEK, 2016; CRICK; CRICK, 2021; MEENA et al., 2022). In this sense, it plays an additional role compared to what is commonly associated with choosing business partners; in this case, trust must be sufficient to allow the relationship to be established with a business rival (GERNSHEIMER; KANBACH; GAST, 2021).

[1] "*Separate rooms*" based on a literal translation to English.

Table 6.2 – Relational components of coopetition

Code	Theme	Description/ examples	References
Relational components	Trust	Belief in the propensity of individuals not to act negatively, even when they possess the capacity to do so, encompasses the moral principles governing cooperative interactions and underscores the significance of trust in mitigating uncertainties inherent in cooperative and competitive endeavors.	Granovetter, M. (2018); Gernsheimer, Kanbach and Gast (2021); Kostis and Näsholm (2020); Lascaux, (2020).
	Coopetition capabilities	Specific-coopetitive capabilities desired to balance contradictions, develop alternative strategies, change scope and content, and understand when and why engage in coopetition. It includes coopetition mindset, analytical acumen, executional skills and sensegiving and sensemaking	Bengtsson, Raza-Ullah and Vanyushyn, (2016); Gernsheimer, Kanbach and Gast (2021); Rai, Gnyawali and Bhatt (2023)
	Tension and emotions	Tensions: Tension can be defined as contradictory forces with conflicting goals. It is intrinsically associated with the idea of coopetition (competition-cooperation). It is also similar to the meaning of conflicts in some coopetition studies. Emotions (coopetitive-related): Emotional ambivalence (for Raza-Ullah et al. (2014) is similar to tension), stemming from conflicting feelings inherent in cooperation and competition.	Gernsheimer, Kanbach and Gast (2021); Raza-Ullah et al. (2014); Tidström (2014).

Thus, in coopetition, the counterpart of trust, which is distrust, gains prominence compared to a simple alliance. In this case, distrust allows actors, even while establishing certain bonds of trust with rivals, to nurture controlled skepticism and maintain guard against any sign of opportunism (RAZA-ULLAH; KOSTIS, 2020).

While trust enables breaking the initial barrier of interaction, it also provides lower relationship control costs (GRANOVETTER, 2018), which are present in transactional governance mechanisms such as contracts (KOSTIS; NÄSHOLM, 2020; RAZA-ULLAH; KOSTIS, 2020; RITALA et al., 2019). Moreover, trust can be seen as a way to manage coopetition directly or indirectly. Kostis and Näsholm (2020) list a series of activities in which trust plays a relevant role in implementing coopetition. For example, trust can facilitate inter-organizational exchange, mitigate conflicts and tensions, reduce uncertainties, and facilitate information and knowledge sharing.

Within the internal context, trust also may reduce tensions and promote knowledge exchange (SERAN et al., 2016; TSAI, 2002). Finally, a gap still exists regarding the role of trust in coopetition, corresponding to its cross-functional performance. In this case, the way trust occurs at one level would impact another organizational level. For instance, interpersonal trust perception could be involved with a

greater or lesser predisposition to engage in a coopetitive relationship between businesses. However, these transmission mechanisms are still poorly understood in the literature (LASCAUX, 2020).

Coopetitive capabilities are defined as specific abilities related to the coopetitive process, supporting its formation and implementation. It is similar to the concept of ambidexterity, within which opposing poles are balanced and managed. Within the literature, one strand of inter-organizational coopetition studies is dedicated to understanding which capabilities are specific and necessary for achieving success within coopetition (BENGTSSON; RAZA-ULLAH; VANYUSHYN, 2016; GERNSHEIMER; KANBACH; GAST, 2021; RAI; GNYAWALI; BHATT, 2023).

Dealing with the ambiguities and contradictions of coopetition is seen as a desired capability to operate within the coopetitive process and is termed the coopetitive mindset. In other words, the coopetitive mindset is the ability to recognize oneself within coopetition and to limit the super-rationalization of the process or avoid its inherent tensions (ANDRIOPOULOS; LEWIS, 2009; RAI; GNYAWALI; BHATT, 2023). Another capability would be analytical acumen, which is defined as "*the firm's ability to perform an in-depth examination of paradoxical situations, explore ways of dealing with them, and develop appropriate creative strategies to manage the paradoxical tensions*" (RAI; GNYAWALI; BHATT, 2023, p.2362).

Moreover, execution capability is considered a coopetitive capability, referring to the ability to make strategic decisions and structure ways to execute them through routines and processes, as well as being able to adapt to changing conditions (RAI; GNYAWALI; BHATT, 2023). Finally, sensemaking and sense-giving would be the capability to connect cognition, action, and outcome within the coopetitive process (GERNSHEIMER; KANBACH; GAST, 2021; PATTINSON; NICHOLSON; LINDGREEN, 2018).

In turn, tensions and emotions complement the relational components of coopetition. In the case of coopetition, tensions, and emotional ambivalence are seen as inherent components of the coopetitive process because coopetition - as the coexistence of cooperation and competition - is based on a paradoxical nature (RAZA-ULLAH; BENGTSSON; KOCK, 2014). In this sense, the presence of these elements is expected at all levels where coopetition may occur, and in a way, this component can be observed in the literature.

Tidström (2014) observes that coopetitive tensions can be grouped into different types: roles, knowledge, power and dependence, and opportunism. In the first case, tension and ambivalent emotions would result from the ambiguities that coopetition imposes on actors. In other words, cooperating in some tasks while competing in others requires actors involved in coopetition to incorporate and adapt to diverse and conflicting roles at different times (RAZA-ULLAH; BENGTSSON; KOCK, 2014; BENGTSSON; KOCK, 2016; STADTLER; VAN WASSENHOVE, 2016).

Another type of tension exists in the sharing of knowledge and information. One recurring concern in studies of inter-organizational coopetition is the leakage of confidential information and intellectual property theft during coopetition. This concern arises from, despite cooperation among competitors, this cooperation is limited in time and a set of activities. Thus, managing the knowledge and information that must be shared and protected is a source of tension for the coopetitive process (BOUNCKEN; FREDRICH, 2016; GAST et al., 2019; RAZA-ULLAH; ERIKSSON, 2017; TIDSTRÖM, 2014).

Power and dependency are also elements that generate tension in coopetition. In this case, based on the power differences among supply chain members, there may be a situation where the member with greater power uses their influence to engage other members in coopetition. This coopetitive formation is built upon the tensions of power and dependency mentioned by Tidström (2014).

Finally, the possibility of opportunism occurring – i.e., when one party in a relationship acts for its own benefit to the detriment of others – is a source of tension in coopetition, as it requires the involved parties to recognize and act quickly and effectively against opportunistic actions to mitigate the damage caused (Cygler and Sroka, 2017; Tidström, 2014; Yu, 2019).

6.3 Research method

6.3.1 Research design

Considering the characteristics of the research problem (i.e., ‘how’ questions, Ciano et al., 2021) and the given theoretical framework, a qualitative approach was chosen for this study. Within this framework, a multiple-case study method was selected

for the research. The choice of multiple cases in this study considers the opportunity to capture details regarding the perspectives of the multiple supply chains and their cooperative-competitive interactions. Simultaneously, it aims to compare the recurrence and the relationship of cooperative-competitive dimensions across various contexts (ROSENSTIEL, 2004). Similar to Handfield et al. (2022), owing to the exploratory nature of this study, a multiple-case study enables the development of theoretical propositions derived from an overarching view of coopetition among multiple supply chains. These propositions can be empirically validated in future studies.

The primary source of information was derived from the practical experience of managers and professionals associated with supply chain management functions. The selection of organizations prioritized multinational companies – based on a theoretical sampling method (EISENHARDT, 1989) - due to the greater likelihood of multiple businesses and their relationships. Previous intraorganizational studies have observed coopetition within these contexts (LUO, 2005; BROWN, GIANIODIS; SANTORO, 2017; CHIAMBARETTO, MASSÉ; MIRC, 2019; AMATA et al., 2021). Additionally, this choice was made to establish a solid basis for comparison (FLICK, 2004).

Moreover, the multinational status of these companies increases the potential to distinguish between multiple supply chains, aligning with the theoretical framework explored in this study, as they are involved with more value chains, the unit of analysis of this research (SONG; LEE; KHANNA, 2016). Furthermore, in the context of multiple supply chains, the study limited its focus to manufacturing companies (product supply chains) that agreed to participate in the research.

Additionally, concerning functions, priority was given to selecting interviewees from the tactical scope (managers and coordinators/supervisors) to examine daily cooperative-competitive dynamics. This choice was also influenced by previous studies showing a greater prevalence of cooperative-competitive tensions at these levels (STRESE et al., 2016; BENDIG et al., 2018; CHEN et al., 2020) with or without a deliberate strategy. All the justifications mentioned in this section align with Steinke (2004) definition of the appropriateness of research, where choices indicate relevant elements contributing to the quality and rigor of qualitative research.

6.3.2 Data collection

The data collection was carried out through semi-structured interviews. The choice of semi-structured interviews was based on the context of the research. While it was possible to identify a set of constructs - referred to as dimensions of coopetition - in the literature, understanding them within the intraorganizational context is still limited. Additionally, the theoretical framework chosen for the supply chain was non-traditional, i.e., the multiple supply chain perspective. Ultimately, the decision was based on flexibility in conducting interviews to gather information that effectively contributed to addressing the established research questions (FLICK, 2004).

Therefore, a data collection tool was devised specifically for this purpose (see Appendix). It comprised a series of questions organized into three main sections: 1) general information about the company and the interviewee; 2) characterization of company operations – to identify the multiple supply chains; and 3) description of coopetition from competition events within the operation. For all cases, at least two supply chain professionals were interviewed to enhance the validity and reliability of the collected data (CIANO et al., 2021). Apart from the pilot test, the interviews were also reviewed by experts in operations and supply chain areas for validation.

Contact with the interviewees was made through electronic channels (e.g., emails, corporate social networks, etc.), and invitations were sent along with a letter explaining the context and objectives. A consent form detailing the data collection, use, and storage of obtained information was provided, ensuring the anonymity of the interviewees to ensure transparency and security in the research process. Given the alternative nature of the theoretical framework regarding the understanding of supply chains, a conversational and open-ended approach was chosen for the interviews. This approach allowed interviewees to openly discuss topics that were occasionally summarized by the researcher at the end to confirm mutual understanding (ROSENSTIEL, 2004; JAKOBSEN, 2020).

Simultaneously, the researcher took notes on the observations and interpretations of the responses in the interview memos. This process aims to contribute to the data analysis and establishes an extensive documentation process to ensure the reliability of the collected data (STEINKE, 2004; JAKOBSEN, 2020). Conducting interviews with multiple individuals from the same organization served as a data triangulation mechanism (FLICK, 2004; FARQUHAR; MICHELS; ROBSON, 2020), allowing for comparisons of perceptions regarding cooperative interactions, understanding of multiple supply chains,

and identifying potential points of disagreement. Moreover, collected secondary data were collected to complement, contrast, or counterbalance the information obtained from our primary sources. Thus, documents, organizational presentations, demand data, and financial information were also used as sources. This approach contributes to triangulating facts using multiple data sources (FLICK, 2004; JONSEN; JEHN, 2009; FARQUHAR et al., 2020).

A total of 16 interviews were conducted across three different companies, for a total of 14 hours. These interviews involved professionals working in areas related to supply chain management processes, such as production planning, S&OP, procurement, manufacturing, among others. For Company 1, 9 interviews were conducted with an average duration of 45 minutes each. For Company 2, 5 interviews were conducted with an average duration of 1 hour each. Finally, for Company 3, 2 interviews were conducted with managerial staff, with an average interview duration of 1 hour and 4 minutes.

6.3.3 Data analysis

The content analysis technique was adopted for data analysis (KRIPPENDORF, 2014). This procedure can be understood as a way to empirically substantiate propositions from collected data, a requirement in qualitative research, according to Steinke (2004). First, a literature review on coopetition was conducted, and the results are shown in Table 1, which serves as the basis for constructing the codebook. This process contributed to the validity of the constructs used for coding because they were directly imported from the literature. Concurrently, apart from the codebook, a descriptive effort was undertaken to characterize the identified supply chains during the interviews and to detail the context in which they operated. These results are summarized in a table.

The recorded interviews were transcribed into a text document and subsequently imported into qualitative analysis software (in this case, NVivo). Coding was performed using paragraphs as the unit of analysis from the interviews. At this stage, the memos developed during data collection helped link some passages from the texts to the insights gained during the interviews, enhancing understanding for coding purposes.

During the coding process, an additional theme was observed and included beyond those initially captured from the previous systematic literature reviews regarding

management mechanisms and relational components. This additional theme pertained to the power asymmetry between multiple supply chains. In inter-organizational coopetition, this theme is found in the studies by Czakon (2009) and Bengtsson & Johansson (2014). Finally, a summary table was developed, taking into account the dimension of coopetition, the codes from the utilized codebook, the identification of the presence/absence of that theme in each of the three cases, and excerpts from interviewees' statements – marked by (E) for interviewee followed by their assigned number and (C) for cases, ranging from one to three, corresponding to the studied companies.

Research rigor was pursued throughout the research process. Multiple sources of evidence were utilized to fulfill validity criteria (GNYAWALI; SONG, 2016; JAKOBSEN, 2020; MONTICELLI et al., 2023). The framework was presented to a panel of specialists for review of research procedures and validation of the model and propositions, thereby enhancing reliability (LARKIN et al., 2016). Transparency and consistency criteria were also observed throughout the research process (GNYAWALI; SONG, 2016; MONTICELLI et al., 2023).

6.4 Results

The present section is structured around two main elements. The first involves the description of companies and characterization of supply chains identified from interviews conducted within the scope of this research. The second part corresponds to the analysis of results obtained from text encoding, discussing the general aspects of intraorganizational coopetition between multiple supply chains, relational components, and management mechanisms observed in the three cases.

6.4.1 Case Descriptions

As mentioned, companies from different sectors were included, but they shared the similarity of being manufacturing companies of products. The descriptions below contextualize the analyzed companies and the identified supply chains:

Company 1: Manufacturer of writing and art products

The first company examined in this study is a multinational producer of writing and art products. Leveraging technical production expertise, the company organizes itself around centers of competence, defining which product groups each country serves as a production reference.

While there is some overlap in capabilities—meaning that more than one country can produce a similar group of products—the approach to market servicing is more geographically centralized. In general, production units primarily supply local or regional markets. Regarding the product portfolio, the company offers writing and painting materials for various audiences, from children to adults, catering to different experience levels (from beginner artists to professionals).

The company also has a luxury product line in its portfolio. For this study, the corporate branch of the group situated in Brazil was examined. This branch operates with three production units within the country and possesses its centralized distribution center. After conducting interviews with representatives from the supply chain functions, it was possible to identify how they define their different supply chains based on a combination of product type and supply characteristics. Thus, the supply chains in Company 1 were as follows:

a. Core product supply chain: The first supply chain involves the core product category produced by the analyzed branch regarding revenue and volume. It corresponds to a highly verticalized supply chain, with one production plant dedicated to raw material processing and another production plant for manufacturing.
b. Non-core product supply chains: The second identified supply chain, termed the "non-core" supply chain by the interviewees about the first, involves a range of products manufactured at the same production site as the core product supply chain. However, these products are based on a technology that does not align with the company's focus.
    a. Plastic-based product supply chain: The supply chain for complementary products exhibits lower volume and revenue compared to the company's core supply chain. However, it distinguishes itself from the second supply chain as it represents a third type of technology managed by the company and centered on plastic products.

b. Outsourcing supply chain: Finally, the last supply chain mentioned by the interviewees was that of outsourced products, which can originate from the same country or other countries.

Company 2: Cosmetics manufacturer

The second company studied in this study is a multinational in the cosmetics sector. It has production and distribution centers spread across multiple countries, operating through various distribution channels. For the research, employees working in supply chain functions with operations in Brazil were interviewed; some of these respondents have global scope in their roles.

The company has an extensive portfolio of products, including items categorized as CFT (cosmetics, fragrances, and toiletries). A significant portion of revenue is concentrated in the perfume category, but the company also offers beauty-related products such as makeup and skincare, as well as wellness products like creams and lotions, and hygiene products such as shampoos and conditioners, among others. It also caters to different age groups, providing products from newborns to elderly individuals. The supply chains of interest for this study include:

a. Critical Supply Chains: In the studied company, the concept of "critical supply chains" refers primarily to purchased finished products or raw materials that represent supply constraints from an inbound perspective.
b. Product-Country Category Supply Chains: Another type of supply chain present in the organization were the supply chains related to product categories in the different countries where the company operates. An additional classification for these chains considered the product characteristic as either regular or innovative.

Company 3: Building materials

The third company examined in this research is also a multinational that supplies products to the construction, industry, and transportation sectors, with centuries of operation. In Brazil, the company controls the entire production process, covering factories, mines, distribution centers, and retail outlets. Three types of supply chains were identified during the conducted research:

a. Supply chains of strategic products: These consist of high-margin products with strategic potential for company growth. They encompass various product categories, representing approximately 5% of the product portfolio, yet yielding high profitability.
b. Core product supply chains: These comprise products considered core to the company due to their volume representation in revenue and expertise built over centuries. However, these products are commodities and, as such, operate through economies of scale.
c. Non-core product supply chains: These include other products that complement the portfolio but are not deemed strategic like those within the supply chains of strategic products.

6.4.2 Coopetitive elements observed across the three cases

Table 6.3 consolidates the results of the data analysis conducted using information from the three companies under study. The table was constructed based on codes selected in the literature review, which served as the foundation for the codebook. Thus, the table presents the main dimensions of coopetition investigated in this study (management mechanisms and relational components), the codes, and an indication - marked with an "x" - of the presence of a specific theme in each case (C1, C2, C3).

Table 6.3 – Summary of results for dimensions and themes of coopetition observed over the three companies

Dimension	Codes	C1	C2	C3
Management mechanisms	Governance and collaboration model	x	x	x
	Knowledge exchange and management	-	x	-
	Value creation and appropriation	x	x	x
	Separation, integration and mediation	x	x	x
Relational components	Trust and distrust	x	x	-
	Coopetition capabilities	x	x	x
	Tension and emotion	x	x	x
	Power asymmetry between supply chains	x	x	x

As shown in Table 6.3, excepting “knowledge exchange and management”, all codes were identified in the three cases for the management mechanisms. In terms of

relational components, except for trust and distrust, all themes were present to varying degrees. Additionally, the theme "power asymmetry between supply chains" was added to the initial codebook considering its presence in the interviewees' statements and its correspondence to the original dimensions considered.

6.4.3 General aspects of intraorganizational coopetition between multiple supply chains: Core and non-core supply chains, resource scarcity, its causes and amplifiers

From the case studies, intraorganizational coopetition among multiple supply chains was identified. In Case 1, this effect was observed in the interaction between the so-called "core supply chain" and the "non-core supply chains" of the organization. In Case 2, interplay was observed between product-country supply chains categorized into innovators and functional ones. Finally, in Case 3, there was interaction between "strategic product supply chains" and others. However, the three cases share, declared or not, the idea of core and non-core supply chains, which makes this concept a central element in coopetition between multiple supply chains.

Intraorganizational coopetition among multiple supply chains occurs from competition for financial resources, workforce, and innovation investments, for the supply of critical input supply chains, and for production capacity in resources that have experienced bottlenecks at a given period. In summary, coopetition for scarce resources.

Besides, the results suggest that the aspects presented as antecedents to coopetition play a different role in intraorganizational coopetition among multiple supply chains. Thus, the antecedents presented in the literature – such as contingencies, interdependence, supply complexity, and inter-organizational coopetition – act as either causes of resource scarcity or amplifiers of coopetition. Regarding the antecedents that act as causes of scarcity, the contingencies and inter-organizational coopetition can be mentioned.

The concept of contingency essentially involves the influence of external factors on coopetition drivers (GERNSHEIMER; KANBACH; GAST, 2021). In one case, the effect of demand variation generated from external effects not controlled by the organization was mentioned, which can lead to bottlenecks in supply and thus favor the emergence of coopetition between supply chains.

Within this context, demand variation can contribute to the emergence of bottlenecks or shortages in supply chains, at least from volume or seasonality variation. In the first case, an increasing volume for a planned period may exceed and generate coopetition between supply chains over some resource or input supply chain.

In the second case, the time shift - either advancing or delaying the occurrence of expected demand - may overlap with other planned demands for a given period and generate the same type of coopetition. Besides, the pandemic and post-pandemic scenarios were mentioned by some interviewees as crisis events that contributed to increased demand variability. In company 1, E4 mentioned this point:

> "I'm giving this example because it happened this year, something that always happens, because no one had planned to handle the demand spike in the post-COVID scenario. Suddenly, the domestic market started pouring in a lot of things, increasing its volume." (E4_C01)

Another aspect to consider is the impact of climate events on supply chains for raw materials. In the case of Company 2, they mentioned experiencing disruptions in the availability of biodiversity supply chains due to climate events. Regarding this issue, researchers have introduced the concept of "climate-induced resource bottlenecks," referring to periods of severe restrictions in resource availability (MARON et al., 2015). The E4_C02 describes this situation:

> "I think we're at the mercy of the harvests, right? And harvests are quite insensitive things. They end up being affected by natural effects, you know? So, from natural effects to political issues." (E4_C02)

Next, there is the case where inter-organizational coopetition precedes intraorganizational coopetition. Rusko (2014) identified this trend in a study focusing on the smartphone supply chain. In the current study, this coopetitive experience occurred within Company 3, where inter-organizational coopetition led to intraorganizational coopetition among multiple supply chains.

In this scenario, the inter-organizational relationship involved sourcing a raw material supply chain from a competitor. At a certain point, the supply from this raw material supply chain began to become irregular, causing internal shortages that, in turn,

fostered intraorganizational coopetition among multiple supply chains. E1 described this event:

> "We have serious issues with the service from some suppliers because of coopetition. For example, when that company has high sales, it stops serving us, so it stops delivering to us, and we start experiencing stockouts here... In some cases, in some specific items, we had quite a lot of problems." (E1_C03)

For the interviewees of Company 3, there was a perception that the competitor limited Company 3's supply to fully meet its production needs. Thus, experiencing a coopetitive relationship allowed the organization to understand both the positive and negative impacts of coopetition at the intraorganizational level and provided the opportunity to address them, enabling the coexistence of these two effects.

On the other hand, other antecedents amplify coopetition, increasing the frequency or intensity of coopetition among multiple supply chains. In this case, the level of interdependence among multiple supply chains can be observed as a factor capable of increasing the frequency of coopetitive events as well as the complexity of product composition.

In this case, the way a new product is developed can lead to intraorganizational coopetition between multiple supply chains. For example, in Company 2, E3 highlighted the company's inclination toward creating products that rely on intricate supply chains - despite the increased risk of disruptions - in pursuit of exclusivity for their offerings:

> "But I think that by making this choice, [the company] adds a critical aspect to the supply chains, you know? Regardless of anything else, just because of the exclusivity it advocates... For example, I remember the valve that we absolutely didn't want from Italy... You start creating a mechanism to fit the chain into your business" (E3_C02)

Exclusivity is desired in new products, as it's closely tied to product differentiation in the market (UPSHAW; AMYX; HARDY, 2017). However, given that most of Company 2's products are not classified as luxury items and there is considerable pressure to ensure market availability for consumers, this strategic choice may inadvertently foster a coopetitive environment that could undermine other organizational goals.

In summary, the research indicates that supply chain complexity tends to arise during the development of new products linked to supply chains susceptible to recurring

coopetitive interactions. This tendency stems from dependencies on critical raw materials supply chains or production resources experiencing frequent capacity bottlenecks.

In the studied cases, the interdependence stemmed from the customer-supplier relationship between supply chains and the sharing of productive resources or critical raw material supply chains. For instance, in Case 1, some products from the organization's non-core supply chains were used as subcomponents in products within the organization's core supply chain. Although the cooperative effect in this case was less noticeable due to the low volume shared, it was mentioned by one of the interviewees during the data collection process.

In Case 2, product interdependence was more prevalent within product-country supply chains. This interdependence occurred due to market overlap between countries, where the same product was available in different markets, and between categories, where the same critical raw material supply chain was necessary for producing various products across different supply chains. The E2 mentioned this point during the interview:

> "[B]ecause we have a component that we call [x], which falls within both the body and fragrance categories, and sometimes, both categories want to run large promotions." (E2_C02)

6.4.4 Management mechanisms for coopetition between multiple supply chains

The present section details the management mechanisms observed along the cases. It is structured as follows: governance and collaboration models; knowledge exchange and management; value creation and appropriation; and separation, integration and mediation.

a. Governance and collaboration models

The governance model entails how coopetitors organize themselves and make joint decisions. In the realm of inter-organizational coopetition, two prominent models emerge: the transactional model, which focuses on contract management, and the relational model, which is grounded in trust, commitment, and shared relational norms. For intraorganizational coopetition, the transactional mechanism becomes less common due to multiple supply chains operating within the same company or group. However, a

corresponding counterpoint can be observed in governance through the organization's internal processes within the supply chain area. In the first two cases, the S&OP/IBP process served as a means for identifying constraints and bottlenecks as described by E1 from Company 2:

> "The MPS serves as the initial filter. Sometimes, it assesses and determines that certain orders can be delayed by another 3 weeks or so. Short-term constraints often stop at the MPS level, especially when they're momentary issues. If I can postpone something a bit, I'll bring it up in the internal critique forum, but if you're telling me it'll become regular in 2-3 weeks, then it might not even need to go to the S&P. It's about what we foresee in a longer time frame, right? So, if it's 5 weeks, 2 months, and we're experiencing intermittency, it competes heavily with other priorities. Then it needs to be escalated because even after playing around with alternative order scenarios, it's clear it won't resolve" (E1_C02)

Within this process, supply chain agents typically identify, communicate, and attempt to manage instances of coopetition across multiple supply chains. However, according to the interviewees (for example, E2 from Company 2), it was noted that relying solely on established processes is inadequate for effectively addressing situations involving coopetition.

> “In this place, at this point in the supply chain, the action plan is as follows. The steps ahead to be monitored are outlined. The forecasted date and other details are provided. While it may not be ideal to convey this message, it's essential to foster communication. Ensuring alignment, clarity, and explaining the ongoing situation is crucial. Securing the action plan, monitoring, and collaborating with the supply chain and sales teams” (E2_C02)

Thus, in all cases except case 3, where a clear emphasis was placed on predetermined criteria and one-way communication, relational governance stepped in to fill the gaps left by existing processes. These processes frequently lack the essential features needed to navigate the complexities of coopetition interactions. These include aspects such as a coopetition mindset, formal separation and integration strategies, as well as mediation elements capable of capturing both the global and individual contributions of multiple supply chains, among others. Thus, the presence of relational elements complement the weakness of the existing processes. Thus, the importance of striking a balance between these two approaches is important for addressing disparities.

In Companies 1 and 2, a combination of relational and processual models could be observed more clearly. In the case of company 3, a search for objective criteria to guide any situation revealed a preference for processes to handle coopetition situations, with the justification that operating through relational mechanisms is not feasible due to the complexity of the operation:

> "Communication is a significant challenge for us today due to the numerous units involved. It's tough to cater to everyone. What I started doing after entering this area is releasing a weekly report highlighting the critical items for the week or month." (E1_C03)
>
> "[W]e have to bring in a bunch of people, and then we discuss, you know? It's not simple, not practical; it's something that I feel we don't end up doing consistently all the time for everything." (E1_C03)

For coopetition, the collaboration model defines shared resources and capabilities, which, combined with the interdependence of supply chains, can shift the nature of coopetition toward being more cooperative or more competitive. For instance, a functional organizational structure might foster greater knowledge sharing among actors managing different supply chains than a structure dedicated solely to one or a few of the organization's supply chains.

This division can either promote more or less coopetitive behavior among supply chains depending on the degree of interdependence between them. For example, in the case of Company 1, where there is a certain degree of independence in manufacturing resources, having separate personnel structures for each "core" and "non-core" supply chains concentrated competition on acquiring intangible resources such as financial resources and investment in innovation.

Conversely, in the case of Company 2, where there is high interdependence among product-country supply chains within a model of resource separation by distinct operations among the countries, there tends to be a greater frequency of competitive events in cases of scarcity than in the first case. In the first case, independence means scarcity is simply an individual aspect faced by a specific supply chain. In the case of Company 3, isolating resources from the core supply chain reduces coopetitive interaction between it and the other supply chains of the organization.

b. Knowledge exchange and management

In turn, within intraorganizational coopetition among multiple supply chains, the dynamics of knowledge exchange and coordination between shared and protected information were observed. For instance, during an internal coopetitive event due to scarcity of supply in one of the critical raw material supply chains, information exchange occurred with the supplier responsible for that supply chain. This exchange involved sharing future volume information to be purchased as a forecast at a specific moment, earlier than other suppliers, enabling the supplier to reserve a supplier capacity and ensure availability in the future as mentioned E1 of company 2:

> "So, there's a specific time for making good purchases, for good negotiations, and after that timing, we end up paying a higher price and risk not being able to fulfill the volume because we didn't have availability." (E1_C02)

This dynamic associated with information exchange results in partial visibility of the supply chain and can contribute to improving the resilience and responsiveness of supply chains subject to coopetitive events within the organization while minimizing opportunistic effects from suppliers due to dependence on resources within the customer-supplier relationship. For this reason, other information was kept protected in this dynamic, such as inventory levels in the company, the dependency of finished product supply chains on those critical raw material supply chains, or even unexpected demand variations.

c. Value creation and appropriation

Another aspect of coopetition process revolves around the creation and appropriation of value. From the organization's standpoint, global value emerges from the combination of diverse products in the company's portfolio that are marketed. Additionally, each product retains its unique value for the business and adds value to the supply chain of which it is a part. However, during coopetition among multiple supply chains, it becomes relevant to observe both the individual and joint value creation of the supply chains. In this sense, coopetition may lead to decision-making regarding the short-term financial contribution of individual supply chains while disregarding long-term

strategic aspects associated with global value delivered by the combination of supply chains. This is where the appropriation of value generated individually and globally by supply chains intersects.

For instance, in the scenario involving Company 1, a coopetitive event, which was conducted on an individual basis, raised a question regarding the assessment of a product's "financial contribution" to the business. However, within a specific supply chain context, reallocating one or more products from one chain to another can affect the remaining products in the original chain, thereby influencing the overall value delivered to the business. Consequently, this case highlighted the need to address how to manage the reallocation of value and volume between supply chains, balancing both individual efficiency and the global contribution of the supply chains:

> "[They] evaluate the margin of the category individually and wanted to change the product to outsourcing. But how can I allocate fixed costs only to [the supply chain that] stays? I'll reduce the margin of those who stay, do you see? It's a very local analysis, instead of global." (E5_C01)

Company 3 illustrates the trade-off between individual and global value generation by bringing up the case of the strategic product supply chain. As mentioned throughout the interviews, the idea of creating this concept came from the conclusion that there would be no room for these products – deemed potentially strategic for the organization for various reasons, ranging from benchmark margins to growth potentials and consolidation in new markets – to develop, juxtaposed with the weight of the organization's core supply chain. The core supply chain lacks sufficient differentiation and requires a high volume to achieve the expected results for the organization, but still makes the business highly dependent on it. In other words, in a regular coopetitive scenario, there would be no room for any non-core supply chains with growth and development potential to appropriate the globally generated value to achieve better results.

d. Separation, integration and mediation

Lastly, there are elements of separation, integration, and mediation. In the case of intraorganizational coopetition, the organizational structure acts as a condition that allows

for greater integration or separation between units, groups, and multiple supply chains. The decision on the design of the organizational structure creates a foundation that delineates which individuals or groups manage one or more supply chains within the organization, which can either enhance cooperation or competition among them.

In Company 1, the change in organizational structure was able to modify governance and collaboration mechanisms, resulting in more or less tension depending on its composition. Similarly, in the observed case, there was increased competition among supply chains that became more independent from each other. Despite greater independence, the need for financial investment in improvement and innovation remained, and this continued to be a centrally coordinated activity by executive leadership.

Likewise, organizational processes serve to further separate or integrate supply chains by defining moments of integration or separation. For instance, this becomes more evident in case 2, where there was a regional organizational structure that, in processes such as S&OP/IBP, conducted integrated analyses of the organization's supply chains at specific times. Even in Company 1, despite being a corporate branch with greater autonomy and even during periods of increased organizational separation, some processes required integrated coordination among supply chains:

> “There were different structures for all the analyses, etc., but it was consolidated when there were constraint meetings, and then the aligned plan was propagated commercially and everything else.” (E2_C01)

The decision to physically separate operations between supply chains can itself be a strategy to reduce the possibility of competition in non-critical processes. For example, in case 3, all physical structures responsible for production and distribution were separated for the company's core supply chain.

The observed mediating elements serve the same function as those observed in inter-organizational coopetition, i.e., acting as forces to establish trust among the actors. However, they can be also sources of complexity and tension (GERNSHEIMER; KANBACH; GAST, 2021). In the cases observed, one can identify the presence of mediating elements fulfilling the role of increasing trust among actors while simultaneously seeking to mitigate the tension of coopetitive conflicts among multiple supply chains.

In each of the three instances, financial indicators serve as mediators in this dynamic relationship. These indicators are incorporated into the process to reveal which supply chain should receive the priority resource allocation. Generally, they are understood as neutral elements within the process and capable of guiding towards the best decision. However, despite being elements that are part of coopetition, caution must be taken because, in general, they tend to act in favor of the core supply chains of organizations, which may bias decisions consistently in favor of these supply chains in coopetitive events.

6.4.5 Relational components of the coopetition between multiple supply chains

The present section details the relational components observed along the cases. It is structured as follows: trust and distrust; coopetition capabilities; tensions and emotions; and power asymmetry between supply chains.

a. Trust and distrust

The first of these was trust. Trust can be seen as a fundamental concept for inter-organizational relationships, including coopetitive relationships (KOSTIS; NÄSHOLM, 2020; LASCAUX, 2020). In the case of intraorganizational coopetition, Loch et al. (2006) highlight the willingness of individuals to cooperate within a context where they identify themselves as part of a group.

As an informal coordination mechanism, trust can be seen as part of social relationships (TSAI, 2002; SERAN et al., 2016). In the cases studied for intraorganizational coopetition among multiple supply chains, trust - and distrust - were present in two of them. In one of the cases, the organization's culture, which is oriented to trust and relationships, was described as an aspect that contributes to the resolution of potential coopetitive conflicts (LASCAUX, 2020). In the same context, the perceived maturity of procedural governance mechanisms for problem resolution is brought up as a counterpoint to highlight the relevance of trust as a mechanism to solve conflicts.

In turn, trust can be impaired by intraorganizational coopetitive dynamics, and this aspect was found in some statements observed in company 2: "*I think it undermines the*

trust in the work, even though it's not trust in the work, right? We should all be working together." (E5_C02).

In this case, coopetitive interaction can lead to decreased trust in other involved members depending on how tensions and emotions are managed during the process. In the case at hand, the lack of prioritization of one or more supply chains can generate the perception that a task was not carried out satisfactorily enough by the group managing those supply chains, thus reducing trust among groups involved in managing different supply chains.

Thus, trust can be understood as a factor that enables coopetitive dynamics to occur even without sufficiently established formal structures - hierarchies or processes. However, as an informal mechanism, trust can be both strengthened and weakened through coopetitive interaction. Therefore, although trust is a fundamental and pre-existing part of the intraorganizational coopetition, mediated by organizational culture, the coexistence of trust with other elements that provide more formality to the coopetitive process is crucial for strengthening trust, rather than the opposite.

b. Coopetition capabilities

Moreover, based on various studies on this topic, managing coopetition requires specific capabilities. Gernsheimer, Kanbach and Gast (2021) categorize these such as a coopetitive mindset, management skills and competencies, sensemaking, and sense giving. In the case of intraorganizational coopetition among multiple supply chains, these capabilities may take on different characteristics from those observed in inter-organizational coopetition.

For instance, the coopetitive mindset can be understood through the paradox of dealing with competition among multiple supply chains while they cooperate for the organization's outcome. In other words, the coopetitive mindset within this context can be summarized from the paradox dilemma, but with an inversion regarding the predominant relationship in inter-organizational coopetition. Thus, while inter-organizational coopetition is based on competition in the market with the possibility of cooperation for a certain period between rivals, intraorganizational coopetition is based

on a relationship of cooperation that unites the organization around its objectives but inevitably faces competitive interactions among its supply chains.

On the other hand, when considering management skills and competencies, it has been observed that the focus of the intraorganizational coopetition between multiple supply chains lies in the ability to anticipate conflicts, assess alternatives and trade-offs, negotiate between areas, and communicate the existing restricted scenario. E4, from company 2, described this aspect:

> "With care, we take it to the commercial side, trying not to generate too many conflicts or information that ends up causing too much alarm in the process. Then we try to bring this feedback to the team so they can understand. Most of the time, we succeed because, as we say we can't fulfill, they also know that the supply chain has limitations. So, there's no point in insisting, but it requires a lot of negotiation; it's not easy. We need the commercial side to align with marketing. Sometimes, communication between these teams becomes a bit difficult." (E4_C02)

In the case of coopetition among multiple supply chains, negotiation capability was deemed essential not only to balance disparities between the size of operations in different countries translated into the volume of a particular supply chain product category but also between the value that different categories can provide at a given moment to the whole business (for example, innovations vs. regular products and strategic vs. non-strategic categories).

In terms of sensegiving and sensamaking, this involves managing coopetitive dynamics to construct internal narratives that rationalize recommended or chosen courses of action. For instance, despite the presence of mediating elements seeking to bring rationality and reasonability to the decision, there are moments when possibilities are compared against other decision criteria that temporarily assume a significant role in a particular coopetitive interaction.

For example, in some cases, decisions are made to serve less prioritized supply chains, even if there is a supply chain with greater global weight and relevance. This resolution requires making sense through case-by-case evaluation and capturing strategic elements that may not be perceived in predefined criteria or a general process that does not consider the coopetition as part of it. The examples below illustrate situations of sensemaking.

For instance, one interviewee mentioned that when evaluating the reallocation of volume from one supply chain to another, they didn't consider the impact of that reallocation on the costs of other products remaining in that supply chain. In a different scenario, discontinuing a supply chain led to loss of market share within a critical customer niche, impacting the long-term strategy. A third example involved advocating for prioritizing a smaller product-market supply chain over the core supply chain due to the strategic relevance it would have in that specific case while having little impact on the main one.

c. Emotions and tensions

Emotions and tensions were also observed in intraorganizational coopetition among multiple supply chains. In these cases, how coopetition was conducted demonstrates to have been crucial for managing emotions and tensions, as one of the interviewees mentioned it is not a "process easy to confront." ("*So, we see that this process is not something we face easily, right? When we encounter this kind of situation, we see that it's a bit... let's say, walking on eggshells, right?*" (E4_C02).

This difficulty in managing emotions also stems from the lack of procedural governance mechanisms that reduce reliance solely on relational mechanisms. Although, in the cases of Companies 1 and 2, there was mention of the organizational culture orientation toward relationships, it can also be observed that how actors sought to resolve conflicts arising from coopetition involved the definition - with varying levels of structuring - of decision criteria or business processes.

In parallel, other events highlight the tensions and emotional ambivalence present in intraorganizational coopetition within the supply chain. For example, in the case of Company 1, when mentioning the lack of prioritization of non-core supply chains in favor of the core supply chain, one of the interviewees emphasized the role that this type of action conveys to the organization, generating negative emotions for the people in these non-core supply chains and consequently reducing their motivation to deliver results.

Besides management, other factors can either exacerbate or alleviate tensions in the coopetitive dynamics. For example, new product innovation can increase or decrease interdependence between supply chains, thus affecting the potential for greater or lesser

interaction between supply chains due to production bottlenecks or shortages of input supply chains.

d. Power asymmetry among multiple supply chains

Finally, the last theme is the asymmetry of power between multiple supply chains associated with the resources that each supply chain holds, and which reflects the ability to influence business decisions. One evident sign of this imbalance arises from the fundamental distinction between the core supply chain and non-core supply chains overseen by the central agent. Notably, the core supply chains had more influence on decisions involving the others. This power stems from the importance— financial, strategic, or both—that these supply chains hold within the business.

For example, in all cases, there was a distinction between what was considered and managed as core and non-core supply chains for organizations. Behind these divisions lies the concept of core competence derived from the resource-based view. From this concept, there are elements perceived as more valuable by the organization that need to be protected. Consequently, supply chains encompassing these products considered the business core competence tend to exert influence and power over others:

> "[In core supply chains], the volumes are double those of the others. So, it's pointless, that's where our business focus is." (E4_C02)
> "If we're going to do [a product-country supply chain with greater representation], we'll have to try to extract from [it], because we need to assist there." (E4_C02)

This aspect doesn't necessarily need to be explicitly stated, but as one of the interviewees from Case 1 noted, it becomes part of the organization's culture, which begins to prioritize the supply chain that, from its naming, reveals where the importance lies as perceived by top management:

> "Even in discussions, like when I had a meeting about a subject related to the [core supply chain] and another about the [non-core supply chain]. For instance, maintenance or necessary investment to support [the supply chains]. There was this difference in attention and priority, truly, but it wasn't written, it wasn't a plan where the company consciously wanted it to be this way. It was because of day-to-day issues, and in practice, that's how people ended up focusing and paying attention." (E2_C01)

6.5 Discussion: Management mechanisms and relational components of coopetition between multiple supply chains

The discussion is organized to compare inter- and intraorganizational coopetition for supply chains. First, a general overview is given by analyzing core aspects of inter- and intraorganizational coopetition. Then, the discussion of management mechanisms and relational components is provided. The initial discussion focuses on exploring the general aspects pertinent to coopetition between multiple supply chains. In all these cases, no declared strategy for coopetition existed. Thus, unlike what is observed in various inter-organizational studies, coopetition as a strategy was not observed in the analyzed cases. However, coopetition as a relationship could be observed and aligns with what Raza-Ullah et al. (2014) present as a paradox-based relationship in which contradictory logics of cooperation and competition coexist.

Based on the paradox between cooperation and competition, intraorganizational coopetition takes a different perspective than inter-organizational coopetition. While inter-organizational coopetition is based on competitive interaction in the market with specific periods of cooperation between actors, intraorganizational coopetition operates on the opposite logic, using a cooperative basis – cooperation on the overall strategy (Supply Chain alignment) - for occasional competitive interactions. This dynamic was observable in the studied cases within the supply chain function.

The observation that internal competition can be seen as an inherent feature of organizations (CHIAMBARETTO; FERNANDEZ; LE ROY, 2022) does not negate the fact that internal competition and coexistence within a cooperative context can allow for the observation of coopetition, albeit from another perspective as has been done by several authors over time (AMATA et al., 2021; DEPEYRE; RIGAUD; SERAIDARIAN, 2018; LUO, 2006; TSAI, 2002). However, regardless of the perspective from which coopetition is observed, a question remains open for both levels: how to manage coopetition (CHIAMBARETTO; FERNANDEZ; LE ROY, 2022). Within this broader scope, intraorganizational coopetition among multiple supply chains aligns with other studies on intraorganizational coopetition, as it shares the similarity of coopetition for internal resources (DEPEYRE; RIGAUD; SERAIDARIAN, 2018; TSAI, 2002) not for

customers as usual at the inter-organizational level (CHIAMBARETTO; FERNANDEZ; LE ROY, 2022).

Indeed, three main areas of competition among supply chains can be observed: competition for financial resources, workforce, and innovation investments, for the supply of critical input supply chains, and for production capacity in resources that have experienced bottlenecks during a given period. In summary, coopetition for scarce resources. Considering the analyzed cases, it was possible to observe that both external and internal elements of the organization can contribute to the scarcity of resources leading to intraorganizational coopetition. However, these elements would act through distinct implications, with some being capable of causing resource scarcity – such as contingencies and inter-organizational coopetition – while others would amplify coopetition – such as supply chain exclusivity and interdependence among multiple supply chains based on finished product composition.

Nevertheless, the central point of resource scarcity lies in the ability to differentiate scarcity based on its impact on multiple supply chains. Thus, resource scarcity affecting only one supply chain of the organization can be seen as a simple bottleneck, theoretically lacking the relational element of coopetition. Conversely, scarcity affects more than one supply chain and subjects them to dispute for resources, where coopetition can be observed.

In general, by affecting multiple supply chains of the organization, coopetition can be observed through a central concept, which is the concept of core and non-core supply chains. The idea of core and non-core supply chains can be analyzed from the resource-based view. This is particularly true, from the idea of core competence within this theoretical lens. Essentially, core competence implies the areas in which a company truly thrives. This aspect encompasses the company's reservoir of knowledge, established practices, and operational dynamics that facilitate skill enhancement. Frequently, a company's growth trajectory is intricately linked with its core competencies. Consequently, a core competence holds significant potential, although it is not assured, to serve as a valuable, rare, inimitable, and non-substitutable asset for the company. (LEI, 2013; GLIGOR et al., 2018).

Thus, core supply chains correspond to the core competencies of the organization, while non-core supply chains, as the name suggests, are complementary in delivering

value to the market. This division also reveals the power asymmetry behind this idea because while from the resource-based view, core competencies need to be protected for being valuable, rare, inimitable, and non-substitutable resources, non-core supply chains, by definition, would not have these same characteristics. Thus, the following proposition is made:

Proposition 1: Core and non-core supply chains correspond to central concepts for the analysis of intraorganizational coopetition among multiple supply chains because it is through the core and non-core supply chains that coopetitive interaction for scarce resources is observed.

The concept of power asymmetry can be observed in inter-organizational coopetition as presented in studies such as those by Czakon (2009) and Bengtsson and Johansson (2014) associated with situations such as asymmetric possession of resources or derived from market circumstances. In such cases, members with more power would have the ability to both articulate the participation of other actors in the coopetitive dynamics through control over behavior and decision-making (LIU; AROEAN; KO, 2023; MUNTEN et al., 2021; WILHELM; SYDOW, 2018) and influence the value creation and appropriation of the value generated by coopetition (CHOU; ZOLKIEWSKI, 2018; LIU; AROEAN; KO, 2023).

Similarly, due to the power asymmetry among different supply chains, core or strategic supply chains would be more likely to influence decision-making about resource allocation, aligning with the broader power dynamics of organizations, as described by Flingstein (1993):

> "The power struggle within the firm determines which conception of control will dominate and how that conception will be translated into concrete strategies. The winners of this struggle will push the organisation in a certain direction and maintain that direction as long as their strategies bring positive results. I use the term subunit power base to refer to the group in the organisation that currently has claim on its goals takes place within the existing infrastructure. A key position in the structure supplies actors in the struggle with a number of resources, the most important is authority. […] Actors in different subunits in the organisation will think about the world differently" (p.419).

In intraorganizational contexts within the supply chain, multiple supply chains configure themselves as power subunits subject to management by organizational actors who leverage internal resources through the influence exerted by supply chains upon each other. This influence generally favors core or strategic supply chains over non-core ones, thereby allowing their existence to be sustained through the perpetuation of strategies associated with prioritized supply chains in resource allocation. Consequently, the following proposition is established:

Proposition 2: In the context of coopetition among multiple supply chains, power asymmetry significantly shapes the dynamics, leading to priority allocation favoring the core supply chains of an organization. This prioritization is driven by the presence of valuable, rare, inimitable, and non-substitutable business resources within these core supply chains.

Regarding governance mechanisms, traditional transactional approaches based on formal contracts are less common due to multiple supply chains operating within the same company or group. However, a corresponding counterpoint can be observed in governance through the organization's internal processes within the supply chain area. The concept of processes lies at the core elements of supply chain management, primarily stemming from studies such as those by Croxton et al. (2001) or Lambert and Cooper (2000).

The notion of processes aligns with transactional mechanisms, as they can be understood as structured means of how activities occur within the organization (SENKUS et al., 2021). On the one hand, process management can be seen as a fundamental means of achieving organizational objectives. On the other hand, it can also constrain development depending on how rigid the processes become in resisting change (REIBENSPIESS; DRECHSLER; ECKHARDT, 2019).

However, what has been observed in these cases was that the existing processes are insufficient to manage coopetitive interactions between multiple supply chains. First, the traditional supply chain processes, in which an attempt was made to manage coopetition, did not distinguish between a common bottleneck – i.e., one that only

affected a single supply chain in isolation – and resource scarcity that resulted in coopetition between multiple supply chains.

Thus, there were no formal structures – although there was an attempt to develop them by recognizing the endeavor to establish shared criteria for mediating conflicts – capable of consciously supporting the coopetitive process alongside other management elements, such as knowledge exchange, value creation, and appropriation, and integration, separation, and mediation strategies.

As a consequence, an imbalanced relationship with the relational form of the governance model was observed. In this case, in the absence of formal structures within supply chain processes capable of supporting coopetition, relational components were used not only to mediate conflicts or deal with coopetitive tensions but also to influence the appropriation of value between supply chains, resulting in disproportionate resource allocation between core and non-core supply chains in organizations when there were no elements capable of separating the multiple supply chains.

In this case, the collaboration model acts as a mechanism capable of defining both shared and separated resources and capabilities. Thus, the collaboration model involves how resources are distributed and shared among coopetitors (GERNSHEIMER; KANBACH; GAST, 2021).

In the case of coopetition between multiple supply chains, this model is based on the organizational structure that can influence other management mechanisms, either by fostering or limiting knowledge exchange among actors, enhancing the individual or global appropriation of value generated, and laying the basis for integration, separation, and mediation strategies. Previous studies (e.g., JARZABKOWSKI et al., 2013; KEH; THELISSON, 2021) also demonstrate that the organizational structure influences not only management mechanisms but also relational components, enhancing or reducing internal competitiveness among actors. Thus, based on the presented findings, the following proposition is made:

Proposition 3: The balance between processual and relational components in coopetition governance contributes to reducing tensions and conflicts by limiting the influence of relational components in resource allocation decisions.

In intraorganizational coopetition among multiple supply chains, the concept of "growing the pie" shifts from the relationship between external actors and can be interpreted from the perspective of multiple supply chains. The idea of value in this dynamic is present in at least two points within the coopetitive process, both based on the understanding that supply chains generate value for the organization, whether inbound or outbound. The first point involves the idea of critical supply chains, which would be those chains of finished products or raw materials that represent supply constraints from an inbound perspective. In this case, these supply chains would have the capacity to generate more or less value depending on the exclusivity or importance they would play in delivering value to consumers through their conversion into finished products. Thus, there would be a competition – interpreted through the value appropriation mechanism – among the multiple supply chains of the organization to capture the value of these critical supply chains.

Another aspect involves the creation and appropriation of value by supply chains related to an agent or product. In this case, the supply chains would be capable of generating value both individually and globally for delivering value to customers as well as improving operational efficiency through coopetition. In the first case, this value creation would occur through the company's product portfolio. The idea of offering different products and services to diversify a company's product portfolio is not new. According to references such as Ansoff and Kotler, the strategy of expanding the portfolio of products and brands to meet the needs of increasingly diverse and demanding customers can be seen as a way to gain a competitive advantage (CHORNOUS; FARENIUK, 2022).

In addition to having a direct impact on the market, the portfolio strategy also influences supply chain management when it is designed around products (ZHU; SHAH; SARKIS, 2018). Thus, the value creation of multiple supply chains would, on an individual level, be associated with the products or agents they encompass, and globally from the combination of particular values, making global value creation higher than the sum of individual values. However, rationalizing this equation within financial metrics appears to be a challenge based on what was observed in the cases. However, it was possible to identify, from the mention by the interviewees, financial metrics such as cost, revenue, and margin to account for the value delivered individually by each of the supply

chains – based on their associated final products – the same rationale was not observed for the case of the global value creation of the supply chains.

This limitation in identifying the overall value created by supply chains becomes particularly harmful for organizations' non-core supply chains. This limitation is due to the power asymmetry between core supply chains – where valuable and protected resources reside – and non-core supply chains – which theoretically complement the value delivered to consumers. Thus, in the absence of mechanisms capable of presenting the overall value offered by the combination of supply chains, non-core supply chains are subject to lesser resource allocation, as only their individual contributions are taken as a reference. Therefore, the following proposition is formulated:

Proposition 4: In coopetition among multiple supply chains, mapping both individual and global value, created by multiple supply chains, can help balance resource allocation during value appropriation between an organization's core and non-core supply chains.

In the inter-organizational context within the supply chain, trust is seen as a critical element both as a precondition that engages rival actors and supply chain members to cooperate and as a relational component that favors the implementation and execution of coopetition, providing support for management activities and mechanisms (KOSTIS; NÄSHOLM, 2020; LASCAUX, 2020). In the case of intraorganizational coopetition among multiple supply chains, trust among the actors allows conflicts resulting from coopetitive events to be resolved through relational mechanisms.

However, in both cases, solely trust is insufficient to address all the tensions and complexities of the coopetitive process. In the inter-organizational case, the trust present in coopetition is accompanied by distrust, allowing supply chain members to remain vigilant regarding the behavior of coopetitors (RAZA-ULLAH; KOSTIS, 2020). In the intraorganizational case, the coopetitive relationship is based on a context in which cooperation – and as a consequence, trust – is pre-existing and ensures organizational unity.

Nevertheless, coopetition can undermine internal trust when there is an imbalance between formal and informal governance models. In other words, the lack of a structured

process that considers coopetitive events and mitigates power asymmetries, and measurement systems that alleviate the relational burden of decisions can contribute to decreasing internal trust among internal stakeholders, ultimately harming the value delivery of some supply chains, especially non-core supply chains. Therefore, the following proposition is made:

Proposition 5: Within intraorganizational coopetition among multiple supply chains, the models of formal and informal governance need to be balanced to prevent trust from decreasing among internal actors as a result of power asymmetry between core and non-core supply chains.

Considering coopetitive capabilities, what is observed in the inter-organizational case is that they are responsible for supporting the formation and implementation of the coopetitive process. The literature has generally focused on capabilities such as coopetitive mindset, analytical perspicacity, executional skills, and sensegiving and sensemaking (GERNSHEIMER; KANBACH; GAST, 2021; PATTINSON; NICHOLSON; LINDGREEN, 2018; RAI; GNYAWALI; BHATT, 2023).

The first point raised is the need for a coopetitive mindset in the intraorganizational context. From what can be observed, there is a lack of clarity regarding the occurrence of coopetition among the actors in the supply chain, although the concepts associated with coopetition could be observed and analyzed in this study. In other words, just as an inter-organizational coopetitive mindset contributes to enabling companies to address the paradoxes of coopetition, the coopetitive mindset in the intraorganizational context is necessary to allow coopetition to be managed consciously, enabling the correct identification and application of specific tools associated with the proposed management mechanisms.

For example, the lack of a coopetitive mindset leads actors involved to seek both the over-rationalization of the process and the avoidance of tensions inherent in coopetition (ANDRIOPOULOS; LEWIS, 2009; RAI; GNYAWALI; BHATT, 2023). In the cases studied, the pursuit of "standardizing" or "automating" decisions involving conflicts arising from competition between supply chains became evident at various

moments, mainly when dealing with the imbalance of relational governance models for conflict resolution.

In one case, for instance, any ambiguity or contradiction was limited by imposing a single decision criterion on resource allocation. In another case, the over-rationalization of mediating elements led to the mass discontinuation of a supply chain that reached the strategic niche of the organization. Thus, the coopetitive mindset proves to be a missing but duly necessary relational component for intraorganizational coopetition among multiple supply chains.

The lack of a coopetitive mindset also limits the subsequent observed capability, which is execution skills. In these cases, the ability to anticipate conflicts, assess alternatives and trade-offs, negotiate between areas, and communicate the existing restricted scenario could be observed. However, due to the absence of a coopetitive mindset, these elements constituted themselves as part of a regular process – in this case, within the planning and S&OP process – without differentiation between a common constraint – a simple bottleneck – and a scarcity involving the dispute between supply chains. Thus, the following proposition is made:

Proposition 6: The lack of a coopetitive mindset for intraorganizational coopetition among multiple supply chains limits the structuring of appropriate processes to manage coopetition, which becomes susceptible to over-rationalization or overly dependent on social relations among actors.

When observing the types of tensions and emotional ambivalence present in coopetition as a result of its paradoxical nature, Tidström (2014) describes four main types: roles, knowledge, power and dependence, and opportunism. Although applicable at different levels of analysis, for the case of coopetition among multiple supply chains, two of these forms were evident in the analyzed cases: roles and power.

Regarding roles, what could be observed in the cases was the tension arising from the need to compete within a predominantly cooperative environment, which is the intraorganizational context, even though it is recognized that organizations can also be seen as arenas of micro-political disputes by agents seeking to project their agendas,

strategies, and exert control over resources (BIRKINSHAW; LINGBLAD, 2005; ALCADIPANI; HASSARD, 2010; BOLMAN; DEAL, 2017), which not necessarily reflect a context of continuous cooperation, but also of possible competition. In this case, as with trust, the limitation of procedural governance mechanisms exposes the coopetitive process to tensions because in the absence of clarity about the expected role of each agent in certain instances of business processes – through, for example, clarity about roles and responsibilities – conflict resolution predominantly occurs through relational mechanisms permeated by power dynamics that also add tensions to the coopetitive process.

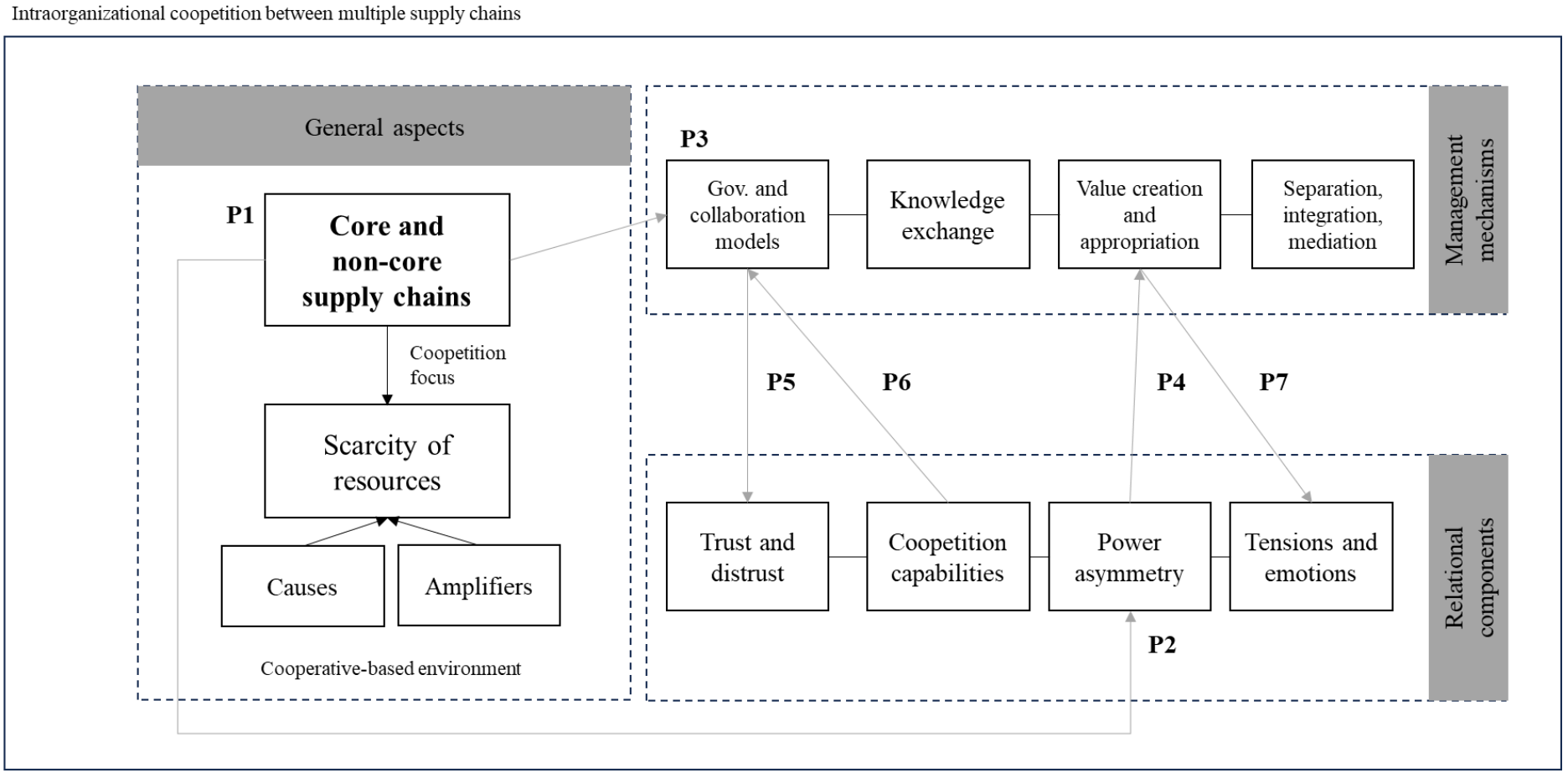
Power dynamics became evident through the relationship between the organization's core and non-core supply chains. In these cases, unlike the inter-organizational context where the holder of power can establish a coopetitive relationship, in the case of intraorganizational coopetition among multiple supply chains, the core supply chain – if not isolated from the others – directly or indirectly controls internal resources in favor of its strategies, generating tensions among the actors. Additionally, the complexity of defining the overall value generated by the combination of supply chains within the organization is a source of tension in intraorganizational coopetition among multiple supply chains. In this case, by isolating the value generated by each supply chain and using it as a reference for decision-making, the interpretation of organizational reality is simplified, and conflicts are favored, especially by agents involved in the management of non-core supply chains.

Thus, considering the previous points, the following proposition is made:

Proposition 7: Power asymmetry between core and non-core supply chains, the uncertainty about the value generated both individually and globally by them, and the lack of clarity of roles and responsibilities within the process are sources of tension and emotional ambivalence in intraorganizational coopetition among multiple supply chains.

Finally, as a consequence of the discussion and propositions created, the model presented in Figure 6.1 was developed to illustrate the relationship between the general aspects of coopetition among multiple supply chains and the relationship between management mechanisms and relational components.

Figure 6.1. – Integrative model of intraorganizational coopetition between multiple supply chains



6.6 Conclusions

Organizations can be seen as multiple supply chains that relate to each other through structures, people, and processes developed to manage them. This relationship is fundamentally cooperative because organizations are built around achieving common goals. However, at certain times, competition for scarce resources coexists with cooperation, giving rise to coopetitive interactions.

This study aimed to explore how intraorganizational coopetition occurs among multiple supply chains, focusing on management mechanisms and relational components. Using a multiple case study approach, three multinational companies were examined based on the experience of internal actors associated with the supply chain function. As a result, a set of propositions and an integrative model of the main components observed in intraorganizational coopetition among multiple supply chains have been developed to illustrate the key findings of the research.

Building upon management mechanisms – governance and collaboration models, knowledge management and exchange, value creation and appropriation, separation, integration, and mediation strategies - and relational components - trust, coopetition capabilities, power asymmetry, tensions, and emotional ambivalence - observed predominantly in inter-organizational coopetition studies, this research was able to verify their presence also at the intraorganizational level and observe the differences considering how they manifest and articulate within this context.

Finally, the concepts of core (or strategic) and non-core supply chains are presented as central elements for analyzing intraorganizational coopetition among multiple supply chains, revealing a category of supply chain whose main characteristic stems from the power asymmetry between them resulting from the organization's perception of its core competencies.

6.6.1 Theoretical contributions

The first theoretical contribution aligns with what Chiambaretto, Fernandez and Le Roy (2022) observe in their study. Unlike inter-organizational coopetition, intraorganizational coopetition among multiple supply chains is not viewed as a strategy

aimed at "growing the pie" through cooperative interaction. The observed intraorganizational coopetition lies in the paradoxical coexistence of relationships that combine competition and cooperation as a foundational characteristic. However, this does not imply that coopetition cannot be developed as an intraorganizational strategy, as already suggested by Song, Lee and Khanna (2016).

In the cases studied, coopetition helped to identify and make the value of each supply chain tangible to the organization, potentially enhancing efficiency in managing these supply chain operations. Nonetheless, the flip side of this dynamic would be the lack of massive prioritization of other supply chains, particularly non-core ones, and the possibility of losing the overall value they deliver to end consumers. Nonetheless, viewing coopetition as a deliberate strategy rather than a consequence of various factors may enable organizations to advance in operational efficiency.

Moreover, the study contributes to what Amara et al. (2021) point out as future research needs, which involve exploring what other aspects beyond capacity allocation intraorganizational coopetition occur within the scope of the supply chain. The present study explored coopetition among multiple supply chains for obtaining financial resources, allocating workforce, and critical raw material supply chains, thus expanding the scope of focus on this type of coopetition.

Interestingly, in line with what Amata et al. (2021) suggest, this study did not observe an immediate effect of strategic leadership of the studied companies on coopetition. Instead, it was found that coopetition can emerge as an effect influenced by strategic decisions—such as organizational restructuring—but with evidence collected within the tactical and operational horizon of these actors, reinforcing the earlier discussion on the role of coopetition as a possible deliberate strategy to be considered in organizations.

Additionally, the study captured the influence of organizational culture on coopetitive dynamics. A cooperative culture was noted to help in adopting relational governance mechanisms when procedural mechanisms for dealing with coopetition were lacking. The study shed light in the internal conceptualization of core and non-core supply chains. In addition to the association with the core competences of the resource-based view, this formulation can be seen through the lens of boundary objects created to generate a "common ground" of understanding among the social actors present in the

organization based on the language and comprehension of those involved in supply chain management processes.

The idea of boundary objects was explored in the organizational study by Bechky (2003) and is based on being a flexible epistemic artifact that inhabits and is transversal to various social worlds, satisfying the requirements of each. Furthermore, the dynamism of multiple supply chains creates a diverse and evolving environment even within the organization. The visible functional horizon of actors at the beginning changes with the transformation of flows from raw material supply chains to product supply chains. Within the concept of supply chain flow, some elements seemed to be sufficient for a common ground between different actors and functional areas. However, due to the exploratory nature of this study, this is a path for further exploration in future research.

Another contribution involves the concept of bottlenecks. Building upon the popularization within organizational contexts of the theory of constraints (ŞIMŞIT; GÜNAY; VAYVAY, 2014), bottlenecks are well recognized in operations, including supply chain management (MIZGIER; JÜTTNER; WAGNER, 2013). However, this study highlights that intraorganizational production bottlenecks can culminate in two main implications: a simple supply constraint—where a single supply chain within the organization is affected—or coopetition among multiple supply chains—which consequently needs to be managed to resolve potential conflicts between them.

Last, echoing Chiambaretto, Fernandez and Le Roy (2022), this study contributes, along with other studies on intraorganizational coopetition, to reinforce both similarities—for instance, the notion of paradox, tension management due to coopetition, the presence of separation, integration, and mediation strategies—and differences—competition for resources rather than necessarily for customers, involvement of internal rather than external actors, the difference in perspective between cooperative-based intraorganizational coopetition and competitive-based inter-organizational coopetition, etc.—which aids in mapping what is truly common across coopetition levels and what should be considered based on their specificities, thereby avoiding misguided assumptions for future investigations.

6.6.2 Practical contributions

Alongside the theoretical contributions, this study offers some practical insights. The study demonstrates that in addition to simple competition, coopetition can be observed and managed within organizations involving multiple supply chains. This insight can contribute to a conscious approach to improving processes exhibiting such interactions, consequently enhancing coopetition management—an ongoing challenge across all observed levels (CHIAMBARETTO; FERNANDEZ; LE ROY, 2022).

In addition, other considerations revolve around how new products are developed, from their association with supply chains subject to frequent disruptions to the allocation of produced volumes within different supply chains. As observed, the more interdependent a given supply chain is from others, the greater the likelihood of coopetition occurring. Integrating this aspect into new product conception can anticipate coopetitive events that might jeopardize product launches or shorten life cycles, especially when they are not part of the core supply chains.

Another point involves, from management mechanisms, how the organization's processes are structured to address coopetition among multiple supply chains. In this regard, organizational processes operate similarly to transactional mechanisms observed in inter-organizational coopetition. In the absence of elements capable of managing coopetition, disputes between supply chains are resolved through relational governance mechanisms supported by relational components – such as trust among the involved actors. Thus, only relational mechanisms may have an amplified influence on aspects such as power asymmetry and the sharing or protection of information, among others. As a result, the outcome of coopetition may be a reduction in trust among the actors instead of its maintenance.

Moreover, through coopetition, it is possible to explore the different contributions of supply chains to the organization, from financial aspects to the strategic role that certain supply chains play in combination with other products offered by the company in delivering overall value to customers. In this sense, coopetition can be a way to strengthen supply chains toward operational efficiency, but also to identify the strategic role—especially of non-core supply chains—in delivering value and defining the minimum criteria of volume or profitability required for keeping a supply chain active in the organization.

Furthermore, given the new post-pandemic scenario and concerns about global supply disruptions due to wars or extreme weather events, coopetition may become more recurrent in day-to-day operations. Therefore, acting consciously and strategically can contribute to preparing organizations to make the best choices regarding the maintenance or discontinuation of their supply chains, ultimately impacting the delivery of value to the market.

Finally, this study, although focused on the tactical realm, is an opportunity for top leaders to be aware that, from the organization's multiple supply chains, the way resources are distributed — shaping internal collaboration models — and decisions about organizational structure — potentially enhancing the separation or integration between supply chains — can trigger greater or fewer occurrences of internal coopetitive events.

6.6.3 Limitations and future studies

Despite the contributions presented, the study has limitations outlined below. First, the research is confined to three cases of companies with supply chains of finished products. Thus, service supply chains were not included or analyzed in this research but could be subjects for future studies.

Moreover, within the scope of product supply chains, this study focuses on specific sectors to explore coopetition. This limitation arises because, based on evidence from studies on inter-organizational coopetition, there are differences in certain coopetitive elements across different sectoral supply chains. Therefore, future studies could explore coopetition among multiple supply chains in other sectors, such as technology or agriculture, where there is a predominance of inter-organizational coopetition studies.

Additionally, this study primarily investigates the tactical rather than the strategic level. Indeed, given the observed lack of structured strategies at the intraorganizational level (CHIAMBARETTO; FERNANDEZ; LE ROY, 2022), this focus allowed for studying coopetitive effects as relationships. However, to advance coopetition as a deliberate organizational strategy, future studies could explore how senior leaders perceive the phenomenon and their understanding of specific organizational

configurations for the prevalence or absence of intraorganizational coopetition among multiple supply chains.

Regarding future advancements, beyond exploring other sectors, it is suggested to delve deeper into the relationships between the presented themes, seeking to understand whether there is causality between them and how these relationships are more or less associated with potential impact areas of mapped coopetition.

7 RESHAPING THE GAME THROUGH ORGANIZATIONAL RESTRUCTURING: INVESTIGATING INTRAORGANIZATIONAL COOPETITION DYNAMICS ACROSS MULTIPLE SUPPLY CHAINS

Research Paper 6: Empirical Research

The coopetition stream.

Note for the reader: Finally, in the last article of both the thesis and the coopetition stream, I, retrospectively, address the coopetition between core and non-core supply chains of an organization from changes in organizational structure over time. This study allows for the exploration of the potential impacts of coopetition on organizations, leading to the development of the concept of *supply chain strangulation* to explain one of these impacts. Additionally, after this study, I develop the concept of the coopetitive effect in supply chains, which names this thesis.

7.1 Introduction

The term "coopetition" was popularized by authors like Nalebuff and Brandenburger (1996) and Bengtsson and Kock (2000), representing a relationship that combines cooperation and competition. As a result, it is perceived as a paradoxical concept fraught with tensions (TIDSTRÖM, 2014). Nevertheless, coopetition has garnered significant attention in the literature due to its potential advantages, spanning from financial gains to environmental benefits (GERNSHEIMER et al., 2021).

In the existing literature, previous reviews have organized the exploration of coopetition across various levels, ranging from the intraorganizational level—which encompasses coopetition between teams, business functions, and organizational units—to coopetition within networks and ecosystems (BOUNCKEN et al., 2015; GAST et al., 2015; BENGTSSON; RAZA-ULLAH, 2016; DORN et al., 2016; GERNSHEIMER et al., 2021).

Concerning supply chains, coopetition typically addresses relationships between buyer-supplier and supplier-supplier (BOUNCKEN et al., 2015). Consequently,

coopetition in the context of supply chains has primarily been investigated as an inter-organizational phenomenon. In these cases, the supply chain is viewed from its traditional and predominant perspective as a set of links and connections facilitating the movement of products and services from primary suppliers to end consumers (LAMBERT; ENZ, 2017).

Nevertheless, even though it encapsulates an understanding of what constitutes a supply chain, alternative modes of comprehension have emerged to provide a more in-depth exploration of this phenomenon. For instance, stemming from a single link, the supply chain can be theorized across multiple levels, ranging from the individual to the organization, or even the supply chain itself (CARTER et al., 2015). Moreover, there is the possibility of conceptualizing an organization as a group of multiple supply chains configured around products or agents, which are supported by processes, information systems, etc. (GATTORNA, 2006).

Considering the intraorganizational context, prior studies have demonstrated that the existence of coopetition is driven by diverse aspects ranging from accessing scarce resources to enhancing innovation potential (SERAN et al., 2016; SONG et al., 2016; CHIAMBARETTO et al., 2019), often encouraged as a corporate strategy, but also sometimes arising as a consequence of the organizational configuration adopted, which may prioritize centralization or decentralization, for instance (TSAI, 2002).

However, little has been studied regarding intraorganizational coopetition (BENGTSSON; RAZA-ULLAH, 2016; DORN et al., 2016; CHEN et al., 2020; GERNSHEIMER et al., 2021), as well as concerning coopetition in the supply chain (LE ROY et al., 2018). Nevertheless, interest in this topic has grown in recent years, driven by the understanding that managing intraorganizational coopetition through specific management tools and models at this level is necessary for dealing with conflicts and their inherent tensions to progress towards enhancing organizational performance rather than jeopardizing it (SERAN et al., 2016; CHIAMBARETTO et al., 2019).

The case studied in this research provides an example in which an organization modifies the organizational structure of its operational divisional unit and supply chain, thereby changing internal collaborative dynamics. This change revealed coopetitive tensions revolving around the allocation of scarce resources. However, upon returning to a structure similar to the one existing before the examined modification, these coopetitive

tensions did not dissipate; they persisted but were observed from a different unit of analysis, referred to in this study as the perspective of multiple supply chains. Through these dynamics, it was possible to associate them with the observed impact on product deletion associated with distinct supply chains of the organization.

Thus, the present study raises the following research question: *How might decisions to change organizational structure lead to the intensification of intraorganizational coopetition between multiple supply chains?*

This study explores the occurrence and evolution of coopetitive relationships over time and how governance and collaboration models (GERNSHEIMER et al., 2019) have evolve, illustrating the interaction between supply chains and the potential impacts on the organization. This study identifies that a change in the corporate structure can reveal the presence of multiple supply chains based on internal organizational agents' points of view. Thus, this finding corroborates the notion of supply chain agent relativism (CARTER et al., 2015). This segregation becomes part of tactical-operational supply chain routines within the organization. In this vein, the study delves into the concept of core competence from the resource-based view to justify an initial classification of multiple supply chains perceived from an organizational structure change.

Moreover, this study illustrates how governance and collaboration models influence different levels of coopetitive tensions, thereby enhancing our understanding of how the management of these mechanisms impacts supply chain competitiveness—a perceived gap in the field of intraorganizational coopetition (SERAN et al., 2016). The study also delves into the temporal dimension by utilizing distinct periods marked by changes in organizational structure, facilitating an exploration of the emergence and evolution of intraorganizational coopetition, as suggested by Seran et al. (2016).

Through the analysis of various phases, this study establishes links between changes in organizational structure and coopetition continua, ranging from cooperation-dominated to weakly/balanced cooperation (CHEN et al., 2020), and proposes possible outcomes based on the case studied. Furthermore, the insights provided by the transaction cost theory highlight how shifts in structure drive supply chains for enhanced efficiency and the reduction of transaction costs associated with asset specificity.

Another contribution arises from the investigation of coopetition from the operational and supply chain perspective (BENDIG et al., 2018), revealing the necessity

of observance towards the manifestation of coopetition within this function, as its consequences—both positive and negative—can reverberate throughout other domains and areas within the organization (AMATA et al., 2021).

Moreover, the adoption of a multiple supply chain perspective in this study advances the exploration of alternative levels within the coopetition domain (BOUNCKEN et al., 2015). Additionally, this research delves into diverse coopetition concepts—ranging from governance and collaboration models to tensions, separation, mediation, and integration—within the intraorganizational context. These concepts are interwoven within a conceptual framework, thereby clarifying the intricate mechanism of intraorganizational coopetition across multiple supply chains. A novel concept emerges within this framework— "supply chain strangulation." This pertains to situations where the essential resources required to sustain the competitiveness of a supply chain are inadequately supplied, thereby jeopardizing the chain's viability within the organization. The model developed in this study presents propositions that warrant testing in future research endeavors.

From a practical standpoint, this study unveils the potential impacts that coopetition can wield on a business, particularly through the lens of organizational restructuring. Drawing upon evidence sourced from stakeholders engaged in supply chain processes, it introduces a model constructed through their expert viewpoints. This construction facilitates both the establishment of connections and the practical application of the model in diverse empirical scenarios. In conclusion, managers must remain vigilant concerning the relative competitiveness of multiple supply chains within the internal landscape.

The structure of this paper is, as follows: Section 7.1 provides an introduction to the research topic, highlighting its significance and laying out the research questions. Section 7.2 offers a comprehensive literature review, presenting the key theories and prior studies relevant to the topic. In Section 7.3, there is the methodology employed in our research, outlining the data collection and analysis techniques. Section 7.4 presents the empirical findings and their implications, while Section 7.5 discusses the results in the context of existing literature and offers interpretations. Finally, Section 6 concludes the paper, summarizing the key findings, their broader implications, and suggesting potential avenues for future research.

7.2 Literature and theoretical background

This section is dedicated to a comprehensive review of the literature encompassing the core subjects relevant to the present case study.

7.2.1 Coopetition: Definition, antecedents, processes and outcomes

Coopetition entails the simultaneous interplay of competition and cooperation. Despite its initial appearance of impracticability, this term, introduced to the lexicon in the 1990s by Nalebuff and Brandenburger (1996) and Bengtsson and Kock (2000), has progressively captured mounting attention within both theoretical and practical domains over the last two decades. The literature concerning coopetition has consistently and substantially focused on investigating the antecedents—also known as its drivers—the process of coopetition itself, and the potential outcomes of coopetition (BENGTSSON; KOCK, 2014; BOUNCKEN et al., 2015; BENGTSSON; RAZA-ULLAH, 2016; DORN et al., 2016; GERNSHEIMER et al., 2021).

Comprehending these drivers has captured significant research interest, as the decision to engage in cooperative relationships with competitors does not invariably stem from the same motives that drive cooperation between partners. In this regard, it has been determined that there are contingent elements favoring coopetition, such as technological levels and highly competitive market (BRANDES et al., 2007, ZACHARIA et al.,2019).

In addition, a significant body of coopetition studies is devoted to understand how coopetition occurs—the dynamics or coopetitive process (BENGTSSON; RAZA-ULLAH, 2016). Table 7.1 summarizes the primary dimensions of the coopetitive process, which have been identified and organized from fragmented literature on the subject (BENGTSSON; RAZA-ULLAH, 2016; DORN et al., 2016; GERNSHEIMER et al., 2021).

Table 7.1 - Dimensions of the Coopetitive Process Identified and Organized in Literature Reviews

	Bengtsson and Raza-Ullah (2016)	Dorn et al. (2016)[2]	Gernsheimer et al. (2021)	Literature synthesis
Coopetitive process	**Dynamic:** - Changes in interdependencies - Configuration and reconfiguration of networks - Interaction between competition and cooperation - Oscillation between pure cooperation and pure competition (dilemma) - Two continua (paradox)	**Initial Phase:** - Establishment of coopetitive mechanisms to ensure control and knowledge flow - Allocation of cooperative and competitive activities to distinct and separate areas	**Execution:** - Partner selection - Collaboration models - Governance models - Knowledge exchange and intellectual property management - Value creation - Value appropriation	The coopetitive process involves aspects associated with the dynamics of how coopetition occurs, which can be observed from a perspective: Temporal: the initial, middle, and end of the coopetitive interaction and the activities that can comprise each of these temporal stages. Theoretical: the combination of characteristics observed by the Actor and Activity schools of coopetitive thought (tryptic of dynamic-complex-challenging) Structural-Relational: the presence of elements that support the execution of coopetition and manage coopetitive relationships.
	Complex: - Multifaceted relationships - Ambiguity, role conflicts, and risks - Differences in network positions, bargaining power, centrality - Contradictory demands for value creation vs. value appropriation, protection vs. knowledge sharing, private gains vs. shared gains - Tension and ambivalence	**Design and Management Phase:** - Encouragement of communication between units, for example, through workshops	**Interaction:** - Trust - Coopetitive capabilities - Emotions - Tensions - Opportunism - Mediation - Distrust - Separation and Integration	
	Managerially challenging: - Governance model, contracts, legal management - Coopetitive mindset - Previous experience - Structural strategies - Third-party mediation strategies - Integration strategies	**Evaluation Phase:** - Impact on company performance: Knowledge sharing, improved customer orientation, increased innovation capacity		

[2] Intra-organizational level only

The framework presented by Bengtsson and Raza-Ullah (2016) synthesized dimensions such as dynamism and complexity, which reflect the characteristics observed in previous empirical studies on coopetition. Simultaneously, it posits that dealing with these dimensions in a manner that ensures the success of the relationship poses managerial challenges. The other reviews, namely, Dorn et al. (2016) and Gernsheimer et al. (2021), seem to concentrate more on management aspects than on the characteristics of the coopetitive process itself. Thus, whether in Dorn et al. (2016) there are three execution phases or in Gernsheimer et al. (2021) with the dimensions of execution and interaction, a significant emphasis is placed on strategies and management approaches.

However, there are recurrent themes that emerge in coopetition studies. One such element is the tension stemming from the coexistence of paradoxical elements, such as the interplay between cooperation and competition, as well as the pursuit of individual interests juxtaposed with collective interests, the sharing versus keeping information, etc. (TIDSTRÖM, 2014; JAKOBSEN, 2020). Another significant element pertains to concepts of integration, separation, and mediation. The structural separation concept involves isolating contradictory elements of coopetition over time and space across various organizational levels. Besides, it might cover maintaining separation strategies at certain levels and integration at others (BENGTSSON; RAZA-ULLAH, 2016).

It also encompasses the separation and certain organizational autonomy of subunits that ultimately belong to the same company (LUO, 2005). In this context, studies like that of Jarzabkowski et al. (2013) link changes in organizational structure with increased potential or reduced competition among functional units. Indeed, the separation strategy is one element that demonstrates a significant distinction between inter-organizational and intraorganizational coopetition. For inter-organizational coopetition, the decision between integrated and separate actions stems from the originally independent nature of businesses, where actors operate autonomously and collaborate for a specific period.

Conversely, in the case of intraorganizational coopetition, the cooperative foundation is more established, with competition arising either due to induced circumstances or unintentional actions. Nevertheless, in both scenarios, the option for mediation remains viable—hence, a third-party actor mediates the interaction between coopetitive entities (BRANDES et al., 2007; COLENO; HANNACHI, 2015).

A final element worth mentioning is that of paradox. The concept of paradox involves the simultaneous pursuit of contrary interaction logics, often illustrated by the yin/yang metaphor (CZAKON et al., 2014; RAZA-ULLAH et al., 2014). One strategy for identifying and describing the numerous coopetitive paradoxical conditions is to consider the roles of cooperation and competition in each moment, leading to variations of coopetition such as competition-dominant or cooperation-dominant, a strong and weak balance between cooperation and competition (BENGTSSON et al., 2016).

Lastly, considering the positive outcomes of coopetition, benefits encompass heightened innovation potential, portfolio diversification, increased revenue, access to technical-operational knowledge, and the ability to enter and explore new markets (BENGTSSON; KOCK, 2014; BOUNCKEN et al., 2015; BENGTSSON; RAZA-ULLAH, 2016; DORN et al., 2016; GERNSHEIMER et al., 2021). Despite the potential advantages, it's crucial to mention that inter-organizational coopetition can entail risks, such as opportunistic behavior by coopetitors or intellectual property leakage. Thus, exploring management strategies to mitigate potential associated risks becomes essential (TOMLINSON; FAI, 2013; WALLENBURG; SCHÄFFLER, 2016; CYGLER; SROKA, 2017).

7.2.2 Intraorganizational Coopetition

In the realm of organizational dynamics, the concept of intraorganizational coopetition has garnered less attention in scholarly literature than its inter-organizational counterpart. This disparity was noted by Bengtsson and Raza-Ullah (2016) in their systematic review. From the emergence of the term in the 1990s until approximately 2015, Bengtsson and Raza-Ullah identified fewer than ten dedicated studies focusing on intraorganizational coopetition, including works by Tsai (2002), Luo (2005), Luo et al. (2006), Loch et al., (2006), Ghobadi and D'Ambra (2012a, 2012b, 2013).

Similarly, Dorn et al. (2016) corroborated this conclusion in a systematic review where, out of the 169 selected studies, only 5% encompassed intraorganizational analysis, also referred to as intrafirm or internal coopetition. However, recent years have witnessed a reversal of the sluggish development pace in the research on intraorganizational coopetition. The number of studies conducted in the past five years now surpasses those carried out in the preceding decade. Furthermore, these recent studies place a more

pronounced emphasis on the potential benefits of fostering innovation and sharing information through effective management of coopetitive relationships (LI ET AL., 2021; MURMANN and ZHU, 2021).

In a broader sense, research on intraorganizational coopetition can be categorized into three distinct levels: interactions between subunits or subsidiaries within the same organization, between functional areas or workgroups. Concerning interactions between subunits, Tsai (2002) underscores the significance of formal and informal coordination mechanisms in facilitating the internal exchange of information.

This exchange, in turn, enhances internal capabilities, synergies, and collective knowledge. Luo (2005) expands on this concept by incorporating the notion of financial gains through economies of scale achieved via effective coordination of business units. The study also delves into the potential roles these subunits might adopt, ranging from headquarters to subsidiaries, based on observed levels of cooperation and competition.

Amata et al. (2021) highlight the pivotal role of organizational structure in intraorganizational coopetition. The study by Song et al. (2016) conducted at Samsung illustrates how internal coopetition can influence decisions regarding the business portfolio, leading to an increased frequency of new product launches. However, inter-unit coopetition still requires further investigation into how to equilibrate the integration and separation of subunit activities to harness operational synergies from diverse units. This equilibrium becomes especially crucial when analyzing empirical examples through in-depth case studies (SERAN et al., 2016).

Conversely, when examining coopetition between functional areas within the same organization, knowledge sharing remains a central theme of interest. However, it also indicates potential financial benefits and enhanced market understanding for the organization (LUO et al., 2006). Tsai and Hsu (2014) explore the potential benefits of coopetition for new product development, weighing the intensity of competition against cooperation. On the other hand, Bendig et al. (2018) present findings that counter Tsai and Hsu's (2014) study on the role of competition in coopetition. They attribute improvements in technology adoption, knowledge diffusion, and increased innovation potential in product development to this aspect.

7.2.3 Coopetition in Supply Chains and alternative levels of analysis for coopetition

Coopetition in supply chains can be understood as coopetition occurrence along supply chain processes rather than merely inter-organizational or network coopetition. Over the years, there has been a growing effort to develop studies on coopetition within supply chains that highlight the occurrence of this phenomenon across various types of supply chains, ranging from automotive, electronics, and food to luxury goods (KATSALIAKI et al., 2023).

Coopetition in the context of supply chains has revealed potential benefits that span from enhancing operational performance to contributing to the mitigation of negative impacts stemming from operations (WILHEM, 2011; BECKEMAN et al., 2013; GALDEANO-GÓMEZ et al., 2015; GALDEANO-GÓMEZ et al., 2016; HEIKKILA et al., 2016; CYGLER; SROKA, 2017; WILHELM; SYDOW, 2018; DEPEYRE et al., 2018). However, the majority of these studies are confined to and framed within the inter-organizational level (BENGTSSON; RAZA-ULLAH, 2016; GERNSHEIMER et al., 2021), meaning they are primarily grounded in the perspective of echelons and links (LAMBERT; ENZ, 2017).

While encompassing the majority of coopetition studies, there are cases where the regular levels of analysis observed in coopetition studies reveal limitations and deviate from the standard classifications of intraorganizational, inter-organizational, network-based, and their respective derivations (BENGTSSON; KOCK, 2014; BOUNCKEN et al., 2015; BENGTSSON; RAZA-ULLAH, 2016; DORN et al., 2016; GERNSHEIMER et al., 2021). For instance, in the case of intraorganizational coopetition, as mentioned, the type of coopetition between individuals, groups, functional areas, and units is assumed (BENGTSSON; KOCK, 2014). Conversely, inter-organizational coopetition encompasses dyads, triads, and so forth (BENGTSSON; RAZA-ULLAH, 2016). Finally, clusters, value chains, and ecosystems compose the network level (BENGTSSON; RAZA-ULLAH, 2016).

However, alternative levels can be observed in some studies in the literature. Depeyre et al. (2018) explored coopetition within luxury product supply chains and identified potential coopetition dynamics between brands under the LVMH conglomerate. In such instances, the core of the intraorganizational coopetitive phenomenon transcends

traditional business units, embracing more abstract entities like brands. This brand would have its own material, information, and financial resource flows, extending the study beyond the three main intraorganizational facets observed in the literature (inter-units/subsidiaries, between functions, and among groups). Similarly, Chiambaretto, Gurău and Le Roy (2016) and Chiambaretto et al. (2019) mentioned coopetition between brands also at the intraorganizational level.

A similar perspective unfolds when examining intraorganizational coopetition with a supply chain emphasis. Amata et al. (2021) study, investigating coopetition in capacity allocation across divisional units within a company, tackles a pivotal supply chain component—production. This exploration encompasses the challenge of reducing idle production capacities, which propels internal coopetition dynamics.

These studies exhibit commonalities with the perspective of multiple supply chains, as brand-centric differentiations highlight material flows around marketed brands as a more abstract level of analysis, and the research by Amata et al. (2021) brings a supply chain focus into the organization.

7.3 Theoretical Basis

7.3.1 The perspective of multiple supply chains

One of the most widely accepted definitions of a supply chain is a set of three or more entities intricately involved in the movement of products, services, financial resources, and information from primary sources to end consumers (MENTZER et al., 2001). While the term "entity" encompasses a broad range of elements, the representation of a supply chain is generally assumed to correspond to a set of companies organized to transform raw materials into final products delivered to the end consumer (LAMBERT; ENZ, 2017). This representation envisions a supply chain as closed echelons and links (CARTER et al., 2015).

During the formative stages of this field, grasping the supply chain through the lens of this theoretical framework of closed echelons and links marked a significant paradigm shift in management. This shift proposed that, beyond focusing solely on individual performance, organizations should recognize that their operational practices influence both their suppliers and customers, and vice versa (MENTZER et al., 2001).

Thus, several concepts such as collaboration, coordination, and synchronization have become highly valuable in the evolving discipline (MENTZER et al., 2001; KANDA; DESHMUKH, 2008; SOOSAY; HYLAND, 2015).

However, even in this emerging moment of supply chain management, authors like Fisher (1997) noted that effectively managing supply chain flows and processes was contingent upon product characteristics. In Fisher's case (1997), a primary distinction arose between functional and innovative products, which led to distinct supply chain management strategies.

Over time, various distinctions between diverse types of supply chains have emerged in the literature. For example, the Triple-A Supply Chain highlights agility, adaptability, and alignment as desired orientations for supply chains (LEE, 2004); the luxury supply chain sheds light on how luxury products influence supply chain management (BRUN et al., 2008; CANIATO et al., 2009); and the green supply chain emphasizes environmentally conscious production and distribution practices (MIN; KIM, 2012), among numerous others.

Indeed, facing the complexity inherent in supply chains of strategies, segmentation, and value proposals, Gattorna (2006) identified that an organization contains not only a single streamlined flow but also hundreds of supply chains, posing a significant management challenge for identifying and managing them. Although Gattorna (2006) proposed mechanisms for managing supply chains based on customer-focused typologies, there is a need to understand what is the supply chain itself (CARTER et al., 2015). The multiple supply chain perspective lies on the understanding that a company could be seen as a group of supply chains to differ from traditional view of supply chain as closed echelons and links.

In this context, Carter et al. (2015), guided by the lens of complex adaptive systems, put forth fundamental premises for the supply chain concept, among which product-agent relativism stands out. Thus, one of these premises establishes that the supply chain is relative to a specific agent or product.

This perspective appears to resonate with the literature that recognizes the heterogeneity present within supply chains, e.g., functional, innovative, luxury, sustainable, green, etc. – concerning product relativism – as well as with the observation of multiple supply chains mentioned by Gattorna (2006). Moreover, there is potential

synergy with language theory, which some authors associate with complex adaptive systems (MUFWENE, 2013; MASSIP-BONET, 2013).

Finally, being a perspective steeped in a human-centric orientation—crafted "by the people and for the people" (LASKOWSKA-RUTKOWSKA, 2007, p.93), the multiple supply chain perspective deals well with product orientation, from a marketing standpoint (LASKOWSKA-RUTKOWSKA, 2007), as well as with the agent perspective, leaning more toward sociology (LASKOWSKA-RUTKOWSKA, 2007). This agent can be an organization, a function, a group of individuals, or even an individual (CARTER et al., 2015) who perceives, socializes, and manages based on their visible horizon the supply chain within an organization (intraorganizational) and across a set of organizations (inter-organizational).

7.3.2 Resource-Based View (RBV) Theory

The Resource-Based View theory posits that an organization's primary sources of value creation are its resources and capabilities. The heterogeneous way each company combines these resources and delivers its services reflects its uniqueness. Consequently, companies identify and leverage resources and capabilities that are both valuable and rare to achieve short-term competitive advantages (BARNEY, 1991; NEWBERT, 2013; BRAHMA and CHAKRABORTY, 2011).

However, possessing valuable and rare resources does not guarantee a sustained competitive advantage over time. Within the RBV framework, authors argue that these resources must also be inimitable and non-substitutable. This strategic combination enables companies to deliver superior value to customers compared to their competitors, setting them apart during decision-making moments.

Another pivotal point highlighted within this perspective is the significance of a high barrier to resource imitation, which organizations can achieve through historical conditions. For instance, an organization with a long-standing tradition and recognition within its industry or product group can establish such a barrier (BARNEY, 1991; NEWBERT, 2013; BRAHMA; CHAKRABORTY, 2011).

The concept of core competence aligns closely with the Resource-Based View. Generally, core competence refers to what a company excels at. It encompasses a

company's knowledge base, routines, and dynamics that enable capability development. Often, a company's evolution is closely tied to its core competencies. Thus, a core competence has a strong potential—though not a guarantee—to be a valuable, rare, inimitable, and non-substitutable resource for a given company (LEI, 2013).

According to Olavarrieta and Ellinger (1997), an organization's strategic resources, including core competencies, offer a sustainable competitive advantage that leads to superior relative performance compared to competitors, fostering organizational learning. Through acquisition, distribution, gathering, and exchange of information with the environment, this learning generates knowledge for updating strategic resources, considering means of adaptation and innovation, which can sustain competitiveness. Additionally, Olavarrieta and Ellinger (1997) emphasize that, based on the RBV, companies should avoid unrelated diversification from their core competencies with the risk of losing focus.

Considering the application of this theoretical lens within supply chain management studies, the RBV is one of the most employed lenses, primarily due to its association with supply chain management as a source of sustainable competitive advantage (OLAVARRIETA; ELLINGER, 1997; GLIGOR et al., 2018). There is a frequent linkage between performance objectives and technologies used in supply chain management with sustainable competitive advantage, and strategic resources enable this connection.

For instance, Amazon's operational competitiveness is rooted in the responsiveness of its logistics distribution. Recent research explores the capabilities required for implementing and leveraging technologies like Big Data along the supply chain to achieve performance objectives, such as cost reductions, enabling organizations to gain a competitive edge in logistic services (DUBEY et al., 2019; BAG et al., 2020; KOUHIZADEH et al., 2021).

Regarding coopetition, the Resource-Based View stands among the most frequent theories employed in studies, as also observed in the case of supply chain management. In this context, there is a greater focus on inter-organizational coopetition, wherein heterogeneity among core competencies drives cooperation among rivals, just as market similarity directs competition (CORBO et al., 2022; KLIMAS et al., 2023).

A recurring aspect identified by studies based on the RBV is the possibility of accessing external resources that foster value-creating activities through coopetition. In this scenario, coopetition is a strategy used to obtain these resources through interaction with competitors (CRICK; CRICK, 2021A; CRICK; CRICK, 2021B; LIU et al., 2023).

Another aspect identified is that coopetitive relationships can help new and small companies to access complementary resources that are valuable for their development. However, similar to other coopetition relationships, there is a risk of opportunistic behavior that can be critical to deal with based on limited resources available to deal with loss of intellectual property or information leakage (LECHNER et al., 2016).

7.3.3 Transaction Cost Theory (TCT)

The Transaction Cost Theory is a theoretical approach that focuses on understanding production and sourcing decisions within organizations through the analysis of costs involved in economic transactions. A central tenet of this theory is that market transactions do not occur without costs and arise from uncertainty, information asymmetry, and opportunistic behaviors.

These transaction costs encompass partner search, negotiation, contract establishment, monitoring, and enforcement. Thus, the Transaction Cost Theory emphasizes that organizations, instead of solely optimizing production, often seek to minimize transaction costs by choosing among different governance structures, such as vertical integration, formal contracts, and long-lasting relationships with buyers and suppliers, for example (KLEIN; MONDELLI, 2013; SILVA, 2021).

One seminal issue pertains to the decision regarding vertical integration (or the make-or-buy problem) of companies, compared to organizing production through networks of independent subcontractors whose interaction occurs through pricing mechanisms in the market. As such, the decision to integrate is justified through transaction cost reduction. Thus, the firm size becomes a problem associated with transaction costs, delimited by the trade-off between external and internal transaction costs (WILLIAMSON, 2005; KLEIN; MONDELLI, 2013).

Within TCT, transactions possess critical attributes that characterize and make them more or less costly. These attributes encompass asset specificity, uncertainty, and

transaction frequency. Transaction frequency involves the recurrence of interactions and, consequently, greater complexity in the relationship. Asset specificity pertains to the degree of specialization of agents or resources involved, which can encompass human, physical, and symbolic capital, among others. Lastly, uncertainty revolves around the agents' ability to anticipate future events confidently (GROVER; MALHOTRA, 2003; SARTO; DE ALMEIDA, 2015; WILLIAMSON, 2009; KETOKIVI; MAHONEY, 2020).

Similar to the resource-based view, TCT stands as one of the foremost theories in supply chain management studies (Gligor et al., 2018; Ketokivi and Mahoney, 2020). Indeed, the origins linked to buyer-supplier relationships arising from the make-or-buy problem can be framed within an organization's procurement processes (WILLIAMSON, 2005; KLEIN; MONDELLI, 2013; KETOKIVI; MAHONEY, 2020).

However, the applications of TCT extend beyond this sphere. As an extension, it offers insights into supply chain risk associated with the governance structures adopted by companies (GROVER; MALHOTRA, 2003; GRAY; BOEHLJE, 2005; BREMEN et al., 2010). Furthermore, TCT aids in decisions regarding asset investments for production, considering the trade-off between higher specificity and greater generality of a productive resource, aiming to reduce intra-firm transaction costs (GROVER; MALHOTRA, 2003; KETOKIVI; MAHONEY, 2020).

Considering coopetition studies, TCT finds application in exploring diverse facets of the topic. For instance, a central element of inter-organizational coopetition involves selecting a coopetitive partner, encompassing not only search but also negotiation and formal and informal agreement establishment (DORN et al., 2016; GERNSHEIMER et al., 2021), which tends to increase transaction costs (FERNANDEZ et al., 2018). Additionally, the inherent uncertainty in coopetitive relationships, linked with the risk of opportunistic behavior by coopetitors and the potential for frequent conflicts, can lead to elevated transaction costs (CYGLER; SROKA, 2017; CYGLER et al., 2018; LE ROY et al., 2018).

In turn, trust (DORN et al., 2016; GERNSHEIMER et al., 2021), as a recurrent element in coopetition studies, along with reciprocity, communication, and perceived fairness, are behavioral aspects advocated as mitigators of transaction costs and should thus form the foundation of constructing such partnerships to achieve win-win outcomes (LIU et al., 2014). Additionally, coopetition can reduce transaction costs associated with

innovation and development, characterized by high specialization and the expenses in acquiring and fostering innovation (CYGLER et al., 2018).

7.3.4 Supply chain, transaction costs, and resource-based view as guiding perspectives of the present research

From the characteristics observed in the organization restructuring performed in the case study shown in this research , the resource-based view, transaction cost theory, and the perspective of multiple supply chains can be considered potential theoretical lenses contributing to the explanation of governance and collaboration mechanisms of coopetition, as well as the implications these models have yielded within each of the observed periods in the research.

In fact, within the governance and collaboration models, the concept of core competence has been prevalent, which can be associated with the Resource-Based View (RBV), just as the make-or-buy decision stemming from coopetitive interactions has suggested that Transaction Cost Theory (TCT) could be used into the investigation as a theoretical framework to contribute in the explanation about sourcing decisions at the end.

Lastly, it is crucial to recognize that the use of these perspectives in the research is limited, primarily due to the challenge of accessing comprehensive evidence for all concepts associated. Furthermore, the phenomenon complexity restricts the possibility of selecting a singular lens to provide a complete explanation.

7.4 Research Method

7.4.1 General overview

This study aimed to investigate the development and transformation of coopetitive relationships over time within a theoretical framework encompassing the perspective of multiple supply chains. It also involves the change of governance and collaboration models besides the interaction among supply chains over time and their potential impacts on the organization.

An in-depth and retrospective case study approach was adopted to achieve this goal. The case study allows collecting evidence from diverse sources of information and promotes a deeper understanding of the phenomenon from the perspective of various stakeholders immersed in the organizational context. This approach focuses on comprehending the dynamics within a specific case context (EISENHARDT, 1989; PIEKKARI; WELCH, 2018). For this case, the case study choice enables understanding the dynamics between organizational structural change and coopetition among multiple supply chains.

The decision to employ a single in-depth case study meets several requirements. Firstly, it enables a profound examination of the theoretical framework of multiple supply chains, which can be regarded as an alternative level of analysis for coopetition. Secondly, this approach offered flexibility in exploring a novel phenomenon by drawing on diverse sources of evidence without being constrained by specific tools or data types (CHIAMBARETTO et al., 2019). Lastly, due to the complexity of coopetition, prior research has consistently employed the single case study approach to deeply capture its inherent tensions and contradictions (SERAN et al., 2016; CHIAMBARETTO et al., 2019; NGUYEN, 2020; AMATA et al. 2022).

The approach centered on a retrospective case study contributes to understanding the evolution of coopetition over time, its dynamics, and its impacts across multiple levels. The retrospective data allows for comparing the model constructed based on the raised concepts with the observed real-world situation (BONFIM, 2021). However, unlike longitudinal studies, a retrospective study carries some understanding of the outcome of a particular event (PETTIGREW, 1990; BERG; MADSEN, 2020; KNOL et al., 2022), which in this case was the emergence of differentiation among multiple supply chains stemming from organizational restructuring.

7.4.2 Case setting

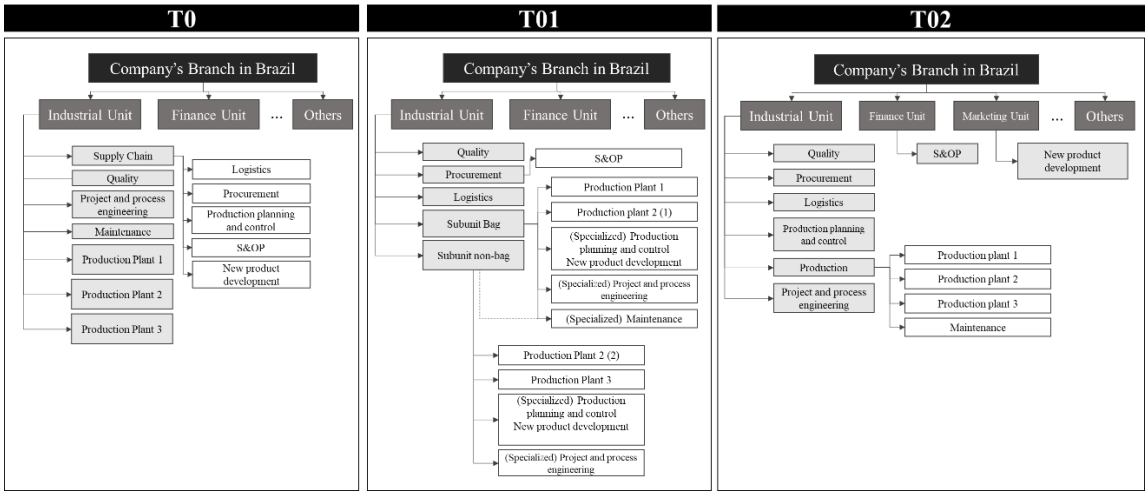
The present study investigated a German multinational company operating in various countries, including Brazil. This Brazilian branch, referred to as Southeast Handbags for confidentiality reasons, is the focus of this research. Within this branch, several business units exist. For confidentiality purposes, this company will be referred

to as Southeast Handbags, and manufacturing products are hypothetically referred to as bags, accessories, and related items.

Initially, during a time interval referred to as T0 (Figure 7.1), Southeast Handbags operated with integrated support functions for each production subunit. This configuration included a corporate maintenance department serving various manufacturing subunits alongside functional areas such as process engineering, quality control, and supply chain.

At the juncture labeled T1 (Figure 7.1), the Southeast Handbags underwent a restructuring of its industrial leadership. This change resulted in the creation of two divisional subunits under the supervision of the industrial unit. This restructuring aimed to shift the focus toward competitiveness, profitability, and process improvement in supply chain management while preserving some functional independence and information exchange.

Figure 7.1 – Evolution of organizational structure over the periods T0, T01 and T02



This separation encompassed, on one hand, management responsible for all production processes related to the supply and manufacture of the company's primary product (bags). On the other hand, it included all other products, formally delineated into a bag subunit and a non-bag subunit. The bag subunit encompassed the vertically integrated segment of the chain involving sourcing the leather used in finished product manufacturing (plant 1). It also partially covered the finished bag production (plant 2 (1)).

The non-bag subunit encompassed a manufacturing plant in the northeastern region responsible for backpack production (plant 3) and the procurement of outsourced backpacks, wallets, and accessories (full outsourcing), including some luxury items. It also covered local production of niche accessories, such as a children's line, small suitcases, and executive briefcases (plant 2 (2)). Figure 7.1 illustrates this resulting organizational structure during period T1.

In this new configuration, the bag and non-bag units benefitted from separate and dedicated support from areas such as production planning and control, new product development, and production engineering. Other departments remained operating for both subunits, including procurement, quality, logistics, and sales and operations planning (S&OP).

After approximately one year under the organizational structure illustrated in Figure 6.1 as period T1, the industrial unit changed to a more integrated model similar to that of T0. The period corresponding to this new organizational structure is denoted as time horizon T2, with notable exceptions, such as the relocation of the S&OP function to the finance department and the transfer of new product development to the marketing department. This operational structure was in place during the interviews conducted for this research.

Finally, it is relevant to note that Figure 7.1 provides a schematic and simplified representation of the analyzed industrial leadership structure. Thus, it omits areas that experienced minimal or no impact from the organizational changes enacted.

7.4.3 Data collection

Primary and secondary data were employed in this research study. Primary data mainly consisted of semi-structured interviews. It is essential to mention that one of the authors worked at the company during the periods referred to as T0 and T1 in Figure 7.1, actively participating as an observer, following the approach of studies by Segismundo and Miguel (2008) and Amata et al. (2021).

Regarding secondary data, the researchers had access to documents, organizational presentations, demand, and financial data about the periods indicated in Figure 6.1. These secondary data were used to corroborate, complement, contrast, or

counterbalance the information obtained from the interviewees. This approach allowed us to triangulate facts using various data sources (FLICK, 2004; JONSEN; JEHN, 2009; FARQUHAR et al., 2020).

Regarding the semi-structured interviews, a total of 9 interviews were conducted during the second half of 2022 by one researcher. These interviews followed a research instrument that had been validated through a pilot application. The interviewees included individuals from managerial, supervisory, and coordination levels impacted by the organizational changes and their implications for supply chain management within the analyzed company. The interview questions were not designed to be rigid but essentially served as a data collection checklist (JAKOBSEN, 2020).

In terms of interview content, it encompassed the following aspects: an overview of the interviewee's professional background (including role, responsibilities, years of experience in supply chain or operations, among others) (XIAO et al., 2019); the direct or indirect interviewee's perspective on the multiple supply chains existing within the organization; their perception of the interaction between these chains through the organization's processes and structures; capturing their insights into how this interaction evolved across different organizational structures; and their perception of the impact on the company's performance and competitiveness.

The interviews were conducted remotely with the assistance of video conferencing technology. They were recorded and transcribed into a text document with the interviewees' consent. Additionally, the researcher took notes during the interviews, serving as memos for the data analysis phase. These notes were intended to record insights gained during the interviews and to outline preliminary conceptual models.

The interviews were conducted conversationally and openly to encourage interviewees to discuss the topics covered by the protocol. The researcher occasionally summarized the main points at the end of each interview to ensure mutual understanding (JAKOBSEN, 2020). The selection of interviewees initially prioritized individuals associated with functional areas and processes in the supply chain, such as procurement, production planning and control, and production, among others.

However, the researchers later adopted a snowball sampling strategy (Amata et al., 2021) to address eventual gaps, validate the information presented, and explore aspects that emerged from interviewees' contributions throughout the interview process

(GIOIA et al., 2013). A summary of the descriptive information about the interviewees, including interview duration and objectives, can be found in Table 7.2.

Regarding participant observation, as previously mentioned, one of the authors worked at the company under analysis during the periods labeled T0 and T1 in Figure 7.1. In this capacity, the author was responsible for production planning and control at the factory located in the northeastern region. Additionally, they oversaw all products of the "non-bag subunit" during period T1.

By immersing himself in the organizational context over an extended period, as advocated by Busetto et al. (2020), the researcher established a profound connection with the subject of the research. This approach allowed them to focus on subtle nuances that might escape a distant observer and played a crucial role in shaping the research problem through practical experience.

It's also important to highlight that, in this particular case where the study is based on historical evidence and therefore has a partially retrospective nature, participant observation could help address the limitation of recalling emotions and tensions by the interviewees in hindsight. This aspect is particularly relevant in the research topic like coopetition (Bengtsson and Raza-Ullah, 2016).

Table 7.2 – Descriptive information of interviews

Informant role	Years of experience in supply chain	Duration	Focus of interview
New product innovation manager	17	1h 11 min	Relationship between the introduction and discontinuation of products associated with the company's multiple supply chains
S&OP Manager	30	52 min	Understanding how the concept of multiple supply chains is addressed between the operations and sales and marketing departments
Supply Chain Manager	10	36 min	Understanding how production planning and control manages multiple supply chains.
Procurement Manager	13	30 min	Understanding the role of purchasing in this competition between chains and how this actor views the various material flows
Industrial Manager	5	49 min	Understanding the more focused role of a productive plant that represented a significant portion of the "non-core" chain type
Industrial supervisor	15	42 min	Gaining a more detailed understanding of the interaction between core and "non-core" from the perspective of the core supply chain.
Quality supervisor	N/A	35 min	Understanding the perception of a service provider area for each of the supply chains regarding topics such as tensions and investment priorities
Project engineering Manager	15	55 min	Understanding the perception of a service provider area for each of the supply chains regarding topics such as tensions and investment priorities.
Industrial supervisor	20	48 min	Gaining a more detailed understanding of the interaction between core and "non-core" from the perspective of the "non-core" supply chain

7.4.4 Data analysis

According to Langley (1999), processual data collected in organizational contexts has numerous characteristics that make them challenging to analyze and manipulate. These include multiple organizational levels with ambiguous boundaries for separation, temporal distances that can lead to reporting inaccuracies, and changes in thoughts, perceptions, and feelings presented by individuals.

However, this data type can be encapsulated into events over time to be explained in terms of constructs existing in the considered theory (LANGLEY, 1999). In the case of this research, the separation into events was made possible through the changes in the organizational structure of the studied company over time, allowing for the contextualization of the evolution of coopetition phenomenon.

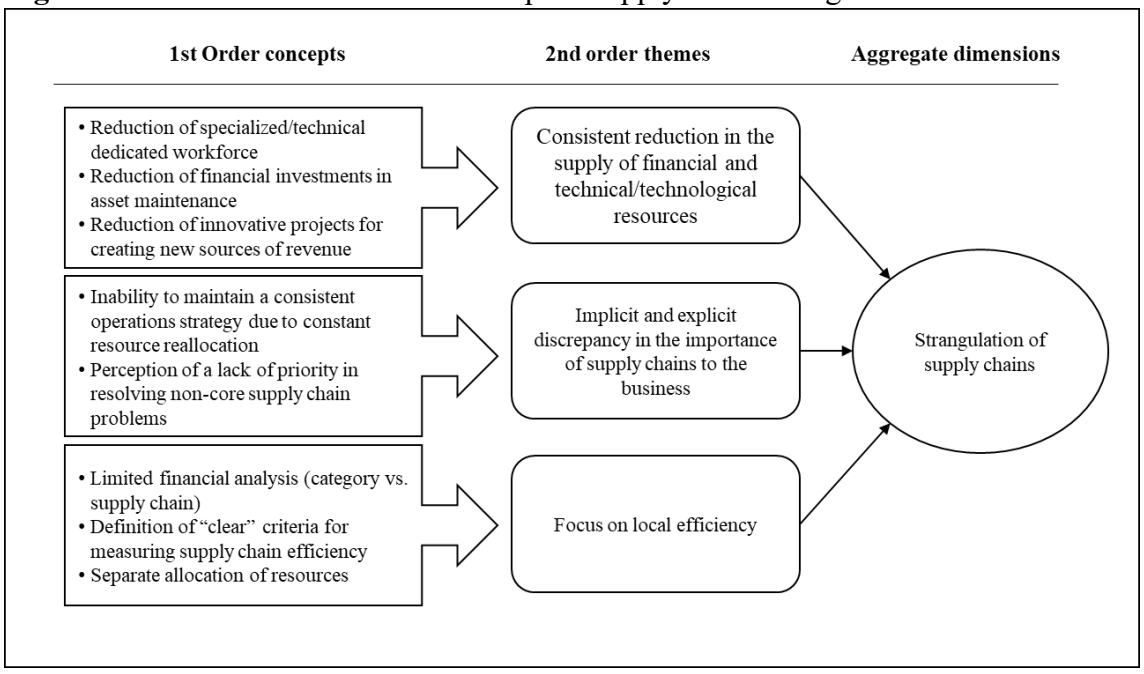
In this vein, two strategies for constructing meaning were chosen to build the evolution of the case study from raw data. The first is the narrative strategy, in which events, activities, and decisions are explained across different periods. The division into

periods delimited by distinct organizational structures also allowed the use of the temporal intervals strategy presented by Langley (1999) and the organization of the case into different units of analysis explored through the theoretical concepts associated with the studied topic.

In particular, this strategy allowed summarizing the study of the Southeast Handbags company in a table where one axis represented the different phases, and the other axis covered the coopetition constructs. The content was filled in from the second data analysis strategy, which was data coding.

The coding process was also used in a deductive-abductive manner, where the concepts identified in the literature review were organized into a codebook that guided the classification of interview paragraphs but did not limit the inclusion of new codes, such as the concept of supply chain strangulation, which was not present in the previous literature review. Figure 7.2 illustrates the data structure for defining the concept of supply chain strangulation based on the evidence analyzed in the research.

Figure 7.2 - Data structure for the concept of supply chain strangulation



The data were analyzed using qualitative data analysis software (QDA Miner), which enables the organization and retrieval of the analysis process (MIKKONEN;

KÄÄRIÄINEN, 2020). First, the concepts chosen to compose the initial codebook were identified from the literature review. These concepts are presented in Table 7.2.

From there, this list of concepts was included in the software. While most of the those used to describe coopetitive dynamics could be retrieved from the literature, allowing for the creation of an a priori codebook for content analysis, there was a need to create a specific concept to illustrate the result of coopetition at one point, and this was done during the coding process and based on the data, structuring first and second-order concepts according to Gioia et al. (2013).

Next, the recorded interviews were transcribed into a text document that was also included in the software. For coding, the unit of analysis was a paragraph in which one or more concepts identified by the researcher were associated. Examples of these codifications are presented in Table 7.1.

Based on the existing literature framework that organizes coopetition into antecedents/drivers, execution/interaction, and coopetition outcomes (GERNSHEIMER et al., 2021), the concepts identified in each event over time were organized within this sequence, which could also be observed through the interpretation of the data during the narrative strategy development. The organization of codes within each of these coopetition stages was proposed based on the examination of transcribed texts, the notes taken during interviews, and the association of existing codes and mechanisms within the adopted theoretical lenses with the observed phenomenon.

Finally, a diagram was created as a result of the coopetitive dynamics observed and according to the prevailing coopetition continuum. In the end, as part of the constructed model, four theoretical propositions were defined for exploration in future empirical studies.

Regarding research rigor, several steps were adopted during the process to achieve this goal. One key aspect involved the utilization of multiple sources of evidence to contribute to validity criteria, as recommended by Gnyawali and Song (2016), Jakobsen (2020), and Monticelli et al. (2023). The majority of information was derived from interviews, with supplementary consultation of documents such as S&OP meeting archives and official communications related to organizational changes.

Furthermore, the researchers presented the created model to a panel of experts who reviewed the research procedures and validated the model and propositions, thus enhancing reliability (LARKIN et al., 2016). Additionally, transparency and consistency in the research process were emphasized, following the guidelines of Gnyawali and Song (2016) and Monticelli et al. (2023).

Evidence obtained was also compared with the theoretical framework identified in the literature (antecedents/drivers, execution/interaction, outcomes), and similarities were observed, contributing to the increased internal validity of the study (JAKOBSEN, 2020). Within this context, efforts were made to clearly define the concepts used, with most of them coming from the reviewed literature, and for the proposed one, the data structure supporting its creation was presented (GNYAWALI; SONG, 2016).

The adoption of the narrative strategy to describe the various events observed in the organization over time, along with the association of the concepts used in the proposed process model, can be seen as a form of coherence between the observed phenomenon, the theoretical framework used – including the support of the adopted theoretical lenses – and the results obtained (GNYAWALI; SONG, 2016).

7.5 Results

This study aimed to explore how the organizational structure can foster coopetition among multiple supply chains, examine the dynamics of execution and interaction within an organization, and assess potential medium and long-term impacts. It outlines three key stages in this evolutionary process.

Table 7.3 provides an overview of the Southeast Handbags company's organizational structure changes over time, offering insights into each period based on coopetition factors, transcribed quotes from interviewed informants, and associations with coopetitive concepts derived from the coding process. Besides, it takes as reference the process of allocation of scarce resources – listed as workforce, financial resources, technical skills, new projects, prioritization in cross-functional processes - as the primary driver of competition among the company's supply chains over the periods studied in the research.

7.5.1 T0: The "Boiling Frog" Moment

The initial focus of this study begins with the period referred to as T0 in Table 6.3. At this time, the organizational structure was based on manufacturing plants with a high level of interaction between them. Notably, there was substantial interaction between Plants 1 and 2, as Plant 2 heavily relied on inputs from Plant 1. Similarly, Plants 2 and 3 shared a buyer-supplier relationship, with Plant 3 manufacturing subcomponents for certain bag products produced in Plant 2. For instance, Plant 3 crafted buckles used in backpacks produced entirely within the manufacturing unit and as inputs for a group of bag products within Plant 2.

This interdependence between products introduced competitive dynamics, as it occasionally strained Plant 3's production resources, leading to decisions regarding whether to prioritize supplying Plant 2 or producing finished products for market sale. In this sense, product interdependence represented an element that could result in competition between manufacturing units that alternated between supplier and customer roles with varying degrees of intensity.

However, concerning this situation, due to their relative autonomy in decision-making, the planning support department—being corporate rather than dedicated to a specific production unit—was responsible for deciding what would be produced to meet both internal subcomponent needs and finished product requirements due to its specialized function and relative independence from production units.

Table 7.3 – Evolution coopetitive process over different periods at Southeast Handbags

Period	Summary of evidence	Quotes from informants/ evidence from documents
T0	Supply chain perspective	Vision by production plants within the organizational structure. Predominantly a closed echelon. 'Before this division (bag, non-bag), they were distinct sectors but not treated as such; they belonged to the production plants' (d)
	- Integrated organizational structure to serve the production plants (Plant 1, Plant 2, Plant 3) - Relative independence of the support departments from the production plants - Cooperation-dominated - Shared and specialized knowledge in each function - Compensation between plants, supply chains and production lines (subsidy) - Organizational inertia for less prioritized supply chains.	"What I see is that there is product interdependence between these [production plants], for example, the use of [product X/produced in Plant 3] [in one of the factories of Plant 2], then there's also the production of [product Z/Plant 2] that goes to [Plant 3], they are all connected in some way. I don't consider them to have very strong relationships, maybe the only difference between [Plant 3] and [Plant 2's factory], because then there's a lot, it's a significant volume percentage that goes from one to the other, but there's a relationship in the way, like, when we plan one [plant], it directly influences the next, resulting in a resource competition" (a) (d).
		Change in executive leadership with a focus on the short term and on products, with a more conservative stance on investments and new projects. "I don't remember having a strong action within this chain (non-bag). There were isolated actions, making combinations in kits, there's a market, there's demand, but without implying an investment in resources, without changing anything" (b).
		"I'm not saying there's right and wrong, but I'm saying that here, to some extent, like the [bag supply chain], which is the main one, has and had a much higher margin; it ended up subsidizing several others. And this is within the company's history, looking at the PandL over the years in this way" (a) (b).
		"And really at the time, we had to make a decision, we had obsolete equipment, like, really, very, very old equipment, and then, as part of the company's strategy over the years, it didn't invest in maintenance. So, this business ended up becoming expensive because there was a very high maintenance cost afterward to keep it running, so it started to snowball" (b) (e).
		"Totally marginalized, very low investment at the time [...] Equipment completely deteriorated, running in a precarious condition for years." "Are we going to invest? No, because it doesn't pay off. Are we going to discontinue it? No, because it's part of the product portfolio; sales didn't allow discontinuation" (c)

Table 7.3 – Evolution of the coopetitive process over different periods at Southeast Handbags (cont.)

Period	Summary of evidence	Quotes from informants/ evidence from documents
T1	Supply chain perspective	The company's documentation reveals the existence of multiple supply chains. These are delineated in the minutes of the S&OP meetings, which began to distinguish between the exchange and non-exchange value chains from the fifth month after the revised organizational structure was put into effect. This document not only outlines the specific subjects within each supply chain but also provides a comprehensive summary of this differentiation. "And during this period, when we even had a different organizational structure, there was a change in the organizational structure to address these exchange and non-exchange structures." (d)
	- Separate and reconfiguration of organizational structure between core and non-core subunits (precursor to the emergence of multiple supply chains) - High independence between subunits with high internal technical specialization - Balanced-weak cooperation between subunits - Power discrepancies between subunits (supply chains) based on their production representativeness on manufacturing volume	Elements from the document prepared to communicate the organizational change: "The employee [...] will assume the management of the area, with the objective of ensuring the supply of non-bag products, increasing competitiveness, profitability, and process improvement." "The employee [...] will assume the management of the bag production chain, with the aim of enhancing the competitiveness of [Southeast Bags' core product] in the global market, maintaining customer and consumer preference." (a) (d)
		"There was an expectation to reduce the financial dependence of the non-bag supply chain on the bag supply chain at this moment." (a) "But there remained a barrier... There was a strange division, I don't know if it was due to rivalry, but it became very clear that they seemed like two distinct companies... This is the technician from the non-bag supply chain, this is the mechanic from the non-bag supply chain..." (c) (d)
		"There was a difference in priority, truly, but it wasn't written down, it wasn't a plan where the company consciously wanted it to be this way. It was because of the day-to-day, and in practice, that's how people ended up focusing and giving attention." (a) (b) "From the perspective of new product development, "when you break it apart and separate it, you'll definitely end up having visibility into things that you didn't have before... because now we want to see it, it's not that I didn't know before that it was subsidizing, that the allocation was going to other categories, etc. Also, because we ended up with a heavier organizational structure, and that was also a point, which ended up duplicating effort and losing synergy." (a) (b) (d)

Table 7.3 – Evolution of the coopetitive process over different periods at Southeast Handbags (cont.)

Period	Summary of evidence	Quotes from informants/ evidence from documents
T1	- Tension between subunits - Lower knowledge exchange due to the loss of synergy - Increased headcount due to duplicate structures - Financial pressure on non-bag supply chain - Use of financial indicators as mediators-arbiters	"But I think the most interesting thing about all of this is that we defined a filter criterion. What filter is it that stays and what falls? This filter we still have to this day, even after the merger. Nowadays, a product doesn't come to market if it doesn't have an X filter, there's this portfolio maintenance of looking to see if something got worse because the exchange rate increased and it doesn't make sense anymore, and the opposite is true." (a) (d)
		"From the perspective of the operational aspect of the backpack supply chain, "If I look at the bottom line, look at financial results, I can tell you that it hasn't changed because it took a while to show results. But if I talk about alignment, connections, synergies, I would say that if I could choose, I would choose the non-bag structure." (a) (c)
		"There was a case within the non-bag supply chain that received investment during this time because it represented a category with the best margin in the company, even with low volume compared to the bag supply chain" (b) (e)
T2	Supply chain perspective	Change in the organizational structure according to T2: "And this goes back to integration, which has been around for about two years now, and this structure is unique again." (d) "In terms of supply, we have four chains: one for bag production, one for backpack production [Northeast plant], one for local niche accessory production, and one for sourcing. I see that they are different in various aspects, such as significantly different lead times, the people working within the company in these chains, and even geographical factors." "Globally, we wouldn't see this, because if we looked at the supply chain not as a whole but as a single entity, you wouldn't see these nuances between them because everything is obviously within the same 'bucket,' that's it. But when you look at it in this subset format, you will deal with trade-offs that aren't so clear to make." "So, I understand that yes, this division was even natural; no one really thought about it. You end up dealing with it day-to-day, in the execution of plans, and in service strategy balancing between inventory and service in a clearly differentiated way, so naturally, this division emerged."

Table 7.3 – Evolution of the coopetitive process over different periods at Southeast Handbags (cont.)

Period	Summary of evidence	Quotes from informants/ evidence from documents
T2	- Organizational structure reintegrated with a production plant responsible solely for production and maintenance departments - Balanced-strong cooperation - Conflict mitigated by the decision to allocate resources (when necessary) to the prioritized (or bag) supply chain - Consolidation of financial criteria as mediators for decision in resource allocation and product deletion - Lower compensation between supply chains - Strangulation of supply chains.	"I have a problem to solve with the procurement department; they have the bag supply chain with production plants 1 and 2, and then unit 3 (corresponding to the backpack supply chain). The backpack chain will always be the last priority because, in terms of business representation, the backpack chain always comes last." "What I understand is that, being a part of the business that is not the flagship, that doesn't have financial representation, they automatically put it at the bottom of the list." (a) (b)
		"The management of the non-bag supply chain worsened after this new integration compared to the period before the division. At least before, there was a team coordinating production; now it's more decentralized" (a)
		"For me [...] where the most potential for money is, that's the first thing people will think about." (b) "I said that, I would say, even more than the financial aspect, if the accounting part is being done correctly with the resources used, for me, the main thing is the image it sells to the organization. Because maybe it's very clear to everyone that one chain can be stronger than another, but when you keep taking resources from the weaker supply chain to put them into the stronger one all the time, you completely disrupt the plans that were made, and you give the impression that the weaker chain is useless" (b) (c) "You're strangulating it to the maximum, and maybe you take the best from this [supply chain] and put it in the other, and over time, you leave that one with less and less 'food' to survive, and then it's obvious that the result won't be good." (a) (b) (e)
		"Because, since the KPIs are clear, you don't need to have separate management" (a) (c)
		"That [supply chain] will never develop because it won't have a strategy. For example, a strategy is created, then it's taken away, and then someone who is doing a better job enters, it's taken from that supply chain and put into another (referring to the bag supply chain). Is there a shortage of resources? Take from one and give it to the other. So, for me, it never develops because of this, due to a lack of resources." (a) (b) (c) (e)
		"The cost of [category Y] in the [backpack supply chain] is very high. It's easier for me to outsource. If you look at the category in isolation, it could be, which wasn't the case. But if you remove [category Y], how does it affect the cost of other products in the chain? It negatively impacts the margins of the others, so globally, it doesn't make sense." (b) (e)
	Coopetition concepts used to code the quotes from informants (based on Gernsheimer et al., 2021)	(a) Governance and collaboration model (b) Value creation and appropriation (c) Tension (d) Separation, integration, and mediation (e) Coopetition outcomes

Furthermore, within Plant 2, there were some production lines specialized in niche accessories, which later became part of another organizational subunit. Thus, within Plant 2, physically coexisted dedicated production lines for bags and niche products. Because they were specific lines, there was little interaction compared to the buyer-supplier relationship between manufacturing units 2 and 3. However, since they were part of the same physical plant (Plant 2), financial and human resources were distributed internally between these two production groups of products (niche accessories and bags), which could be a potential point of competition, given that such resources were limited within the organization.

Nevertheless, an inverse situation was observed; there was a cooperative approach to resource allocation. Bag production generated substantial value, financially supporting the overall results of Plant 2, irrespective of the profitability of niche accessory production. Indeed, during this period, operational inefficiencies were compensated for by both the overall value generated and the marketing need to keep these products in the portfolio for customers.

However, the continued existence of this dynamic for an extended period can be associated with the metaphor of the boiling frog. Although it is a metaphor, the boiling frog can be used to illustrate the situation that when subjected to a scenario of incremental and non-drastic worsening of water temperature, the frog would remain inert until it was boiled alive.

In this case, for several years, the choice was made not to invest the necessary financial resources to maintain these resources and innovation of production assets to keep them competitive in the evolving market at least. This dynamic contributed to the progression of the production lines associated with niche accessories towards a state of inertia, which did not only apply to the production area but also to how the organization managed these products. This scenario persisted until the organizational structure of the industrial area was reconfigured, ushering in a new period referred to as T1.

7.5.2 T1: The emergence of coopetition

While, as previously mentioned, there was a certain level of competition between production units 2 and 3 for productive capacity during some periods, it was during the period referred to as T1 that coopetition became evident, emerging from the organizational restructuring carried out in the industrial business unit. As illustrated in Figure 1, the organizational structure reorganized the production subunits around the concepts of "bag" and "non-bag," as described. The "bag" subunit dealt exclusively with handbags, the company's primary product line, and the "non-bag" category encompassed all other products in the company's portfolio, ranging from internally produced to outsourced items.

Each subunit had a specialized and separate set of support departments, which were also divided following this same concept. Thus, illustratively, there was a planning area specialized in "bag" products and a planning area for "non-bag" products, the engineering department of the "bag" and "non-bag" units, etc. Despite the previously described regrouping of subunits, what was reflected was a separation between them, driven by the specialization of each of these areas, resulting in a high degree of independence between the units. This structure led to a reduction in the level of cooperation – or synergy, as mentioned by some informants in Table 6.3 – compared to the previous period, and consequently, an increase in competition among them, as financial resources remained limited for investments and operations maintenance.

Furthermore, approximately five months after the implementation of the new organizational structure, the production subunits began to be perceived and referred to as "bag" and "non-bag" value chains in internal communications such as meeting minutes and the S&OP process. This denomination involved not only the industrial business unit but also marketing, sales, finance, and other areas of the organization. Another consequence of this separation was evidencing the power difference between these two value chains. At this point, it is interesting to note that the reorganization was carried out from the perspective of the production subunits. This fact becomes relevant considering that, even though the supply chains in terms of gross sales accounted for approximately 50% of the annual results, and the "bag" product was the company's flagship product, representing 70% of the total revenue from manufactured products, as opposed to 30% from the "non-bag" unit, as shown in Table 7.4.

Table 7.4 – Comparison between "bag" and "non-bag" supply chains over periods T0, T1, and T2 in terms of sales and portfolio size

Gross Sales Supply Chain	Porftolio	T0	T1	T2	Manufactured products (Avg.)	Representativeness (%)
Handbag	Hangbag	57%	56%	56%	Hangbag	71%
No-handbag	Backpack	16%	16%	16%	Backpack	21%
	Niche acessories	6%	5%	8%	Niche acessories	8%
	Sourcing	22%	23%	20%	Sourcing	N/A
Total Geral	**Total Geral**	**100%**	**100%**	**100%**	**Total Geral**	**100%**

Qty SKU Supply Chain	Porftolio	T0	T1	T2	T2 - YR2	Product deletion impact (T2-Y2 vs AVG)
Handbag	Hangbag	27%	29%	30%	33%	-13%
No-handbag	Backpack	20%	21%	18%	17%	-30%
	Niche acessories	9%	8%	9%	8%	-31%
	Sourcing	44%	42%	43%	42%	-24%
Total Geral	**Total Geral**	**100%**	**100%**	**100%**	**100%**	**-22%**

In conclusion, the fact that the restructuring was centered around the production units appears to have granted greater power to the subunit with the most expressive production parcel, which, in this case, was the "bag" subunit. Besides, the governance and collaboration model also changed from this restructuring, and the compensation format and subsidies that existed in the previous period were no longer in place, amplifying the visibility of inefficiencies as costs increased with the growing number of personnel.

Contrary to expectations, as stated in the communication and reiterated by some informants, that the separation between "bag" and "non-bag" supply chains would enable greater financial independence of operations and a shift towards profitability, what occurred was an escalation of tension between the supply chains due to the reduction in the cooperative environment that existed in the T0 period and the ongoing prioritization of allocating financial resources to the "bag" supply chain.

With the increased tension over resources, indicators began to play a more significant role in arbitrating decisions related to competitiveness between the "bag" and "non-bag" supply chains. These decisions encompassed product maintenance, equipment investments, and innovation development, among others, as one interviewee noted. After a year of operating in this manner, the industrial business unit was once again reorganized

with a focus on integration between production units and a renewed separation of support departments.

7.5.3 T02: Together Again?

The current organizational structure is configured as illustrated in period T02 in Figure 6.1. In this new phase, all production subunits have merged into a unified production department, emphasizing a holistic approach to all productions, regardless of their origins. The support departments have been reallocated in an integrated manner, either within the industrial business unit, as is the case with production planning, or outside, such as, for example, S&OP, which has become part of the finance department.

For the production subunits, this configuration resembles the model from period T0 when production plants operated autonomously, separate from support areas, and not under their direct management, as was the case in T1. However, despite structural similarities to T0, several elements from T1 have continued to influence the operational dynamics of T2, resulting in distinct consequences from those observed in T0, such as organizational inertia.

Despite the integration of production plants through the production department, the distinction between supply chains seems to persist, even though not formally declared in the organization's strategy. According to the evidence gathered during the interviews, the "bag" and "non-bag" supply chains of T01 have transformed into four supply chains, still bearing some association with the previous division. Thus, the supply chain exists, but the "non-bag" supply chain has been separated into the supply chains for backpacks, niche accessories, and sourcing. The representation of these supply chains can be observed in Table 6.4.

The evolution from "bag" and "non-bag" division to that between supply chains was also reported by some informants. According to them, it was something "natural" that ended up and became part of the day-to-day supply chain management processes within the company.

However, in period T0, this separation between supply chains was not evident, nor was there a declaration of a "value chain" for each of these chains that emerged in period T02. This difference suggests the role of the organizational structure defined in period

T01 as a precursor to the emergence of multiple supply chain perspective, even after its reformulation.

Thus, there is a formal production department based on the organizational structure grouping the manufacturing plans, with a shared understanding of distinct supply chains observed from the perspective of multiple supply chains and present in the interviewees' discourse. With this, what was a collaboration model with a predominance of cooperation in period T0 and the possibility of competition in period T1 has evolved into an intermediate scenario in period T2, as described below.

Based on the interviews, it was identified that, unlike in period T0, the integrated management of production subjected supply chains to a set of decision criteria and shared financial metrics - referred to as "filters" by the interviewees. These filters have gained prominence since T01, serving as mediating elements in the coopetition among multiple supply chains.

As a result, the governance and collaboration model existing in period T0, whose primary element of cooperation lay in the subsidy between supply chains, has been altered with the inclusion of mediating components for the allocation of resources from the "bag" supply chain to the "non-bag" supply chain. Hence, the capture of value generated by the supply chains remained segregated.

Although integrated within the production department, the supply chains continued to compete between them for financial resources and technical capabilities. However, the governance and collaboration model established limited the competition during this period because it subjected all production plants to centralized management and disassociated specific support for each supply chain. This rearrangement resulted in difficulties for the "non-bag" supply chains to compete with the "bag" supply chain.

Interviewees highlighted a challenge in problem resolution for the "non-bag" supply chain, where the best technical and human resources are often reallocated to the "bag" supply chain due to its significance in the company's manufacturing volume and sales. Thus, the defined criteria of margin and revenue that predominated from period T2 onwards have led the organization to managerial decisions that, unlike in period T0, further strengthen the "bag" supply chain through compensations from the "non-bag" supply chain, generating tensions primarily for the resources dedicated to serving the latter supply chain, which was not observed in T0.

As a consequence of this dynamic, as observed by the interviewees, the "non-bag" supply chains began to be "strangled" - as described in their statements - due to the lack and inability to compete with the "bag" supply chain within this new governance and collaboration model. Additionally, this dynamic impacted the organization's culture, as the continuous reallocation of resources between supply chains has negatively affected how people who work from the "non-bag" supply chain perceive their work within the organization.

With the "strangulation" of the supply chains by the governance and collaboration model and the presence of mediating elements established in period T1, another impact of coopetition has been the product deletion of niche product chains in the second year of period T2 and failed attempts to reallocate products within the sourcing product supply chain.

7.6 Discussion

The present case study, focusing on Southeast Handbags company, has revealed a set of results that align with the literature presented in terms of coopetition, the perspective of multiple supply chains, and other theoretical lenses used to explain the observed phenomenon over time.

The first aspect explored in this study was the framing of the supply chain from the perspective of multiple supply chains, which involves, in summary, viewpoints such as those presented by Gattorna (2006) and Carter et al. (2015). In this context, the first point to observe is the coexistence of the traditional view of the supply chain as a closed link and multiple supply chains perspective. In this sense, the organization can be seen as a participant in global supply chains, in which the Southeast Handbags company interacts with different companies upstream and downstream, as it is not fully vertically integrated and does not have control over the distribution along the sales channels in which it operates.

At the same time, internally, beyond the company's role as part of a closed supply chain, it was possible to observe the subdivision of this link into multiple supply chains. Thus, four supply chains were mentioned as the main ones within the organization from the interviewees' point of view. These supply chains are not subsidiaries of the company,

nor do they correspond to isolated product categories; they are flows of materials and finished products that share similar supply chain characteristics and are managed within the supply chain management processes as separate entities subject to discussions and trade-offs.

In this case, the precursor role of the organizational structure change in differentiating multiple supply chains for the interviewees was observed, initially at time T01 as the value chain "bags" and "non-bags" corresponding to the subunits "bags" and "non-bags," but later, at T02, the view of the four predominantly mentioned supply chain configurations familiar to the interviewees emerged more prominently. Thus, although there was some differentiation in the T0 period, organizational change as a top-down driver was a catalyst that made these multiple supply chains more evident to the organization's internal actors.

However, the organizational change, formally eliminating this differentiation from the company's organizational structure, was not enough for the interviewees to stop perceiving the differences between the multiple supply chains. Thus, the subdivision into four supply chains in the T2 period can be seen as an emergent bottom-up configuration.

Bringing Gioia's (2012)[3] thinking into the perspective of multiple supply chains applied in this case, it is as if each agent involved in the supply chain functions socialized their relative view of the supply chain, and socially, the company (or part of it) organized itself around a predominant understanding, shaping communications, practices, and actions. Thus, product-agent relativism is closely associated with how multiple supply chains are delimited and managed by the organization's internal actors (CARTER et al., 2015). Finally, as mentioned by Wieland (2021): "*supply chains may appear and disappear over time, as do the narratives that keep them alive. This has fundamental implications for the role of the supply chain manager*" (p.68).

From this, the first proposition of this study is:

[3] "*In addition to the basic assumption that the organizational world is socially constructed, we employ another crucial and actionable assumption as well: that the people constructing their organizational realities are ''knowledgeable agents,'' namely, that people in organizations know what they are trying to do and can explain their thoughts, intentions, and actions*" (Gioia, 2012).

Proposition 1: The perspective of multiple supply chains coexists with the view of the supply chain as a "closed link" and can emerge both from a top-down operations strategy (e.g., a change in organizational structure) and bottom-up (e.g., shared understanding of a division between supply chains that facilitates decision-making at the tactical-operational scope).

The second aspect pertains to the role of organizational inertia in creating "strong" supply chains and "weak" supply chains, as mentioned by one of the interviewees in the study. Although this concept is part of subjective perception, there are elements identified in the quotes or analyzed data that reinforce this idea.

The first is that, in general, companies, even multinational and diversified ones, have some product categories that correspond to their core. Generally, this condition is followed by the company's predominant revenue and margin. Therefore, it is most likely that these product categories could be considered as a specific supply chain encompassing key suppliers and customers. It is also for this supply chain that the effect of organizational inertia represents the critical impact on the long-term sustainability of the business and structurally affects the organization as a whole. In the case of the studied company, the "bag" supply chain would correspond to this core supply chain.

The mentioned characteristics align with elements present in the resource-based view, primarily in the concept of core competence, which is what the company does relatively well (Lei, 2013). In this case, some elements associate the "bag" supply chain with strategic resources - valuable, rare, inimitable, and non-substitutable - that maintain the company's sustainable competitive advantage (BARNEY, 1991; NEWBERT, 2013; BRAHMA; CHAKRABORTY, 2011).

One of these elements is the high barrier to imitation of the company's "bag" products, which have reached a benchmark of quality and customer preference due to a long tradition within the industry in which it has operated for over 200 years. Another is associated with the vertical integration of the leather, the main component used to produce the bags from the "bag" supply chain. Besides honing refined production techniques over the years, the company has also mastered the management and production of the core raw material, creating a unique blend of productive resources and specialized technical knowledge that differentiates it from competitors over time.

As a component of Southeast Handbags' marketing strategy, additional products are included in the company's portfolio to complement its main offerings, addressing the unique needs of various consumer profiles and age groups, among other factors. These products were grouped in the 'non-handbag' value chain. Curiously, this is the same concept used by BAT to separate its products, i.e., through 'leaf' and 'non-leaf' supply chains (BAT, 2019).

Based on the RBV (Resource-Based View), this pattern for distinguishing supply chains can be seen as the counterpart to core competence. In this case, the perceived relevance of a substantive group of products is reduced to a complementary element to the company's primary value offering, as all other products offered are reduced to a general term and counterposed to the company's core competence. Thus, based on the concept of core competence from the RBV, it is possible to understand the motivation for the initial division of multiple supply chains between "bags" and "non-bags" in period T1.

In addition to core competence in building "strong" supply chains within the organization, the contribution of governance and collaboration models in period T0 was observed to drive the creation of strong and weak supply chains. Gernsheimer et al. (2021) present transactional and relational governance, escalation for conflict resolution, complexity of collaboration structure, and definition of shared resources as elements within these models.

At time T0, the fully integrated governance and collaboration model contributed to the overall compensation of value created by supply chains and minimal tension between them, resulting in organizational inertia. Due to this inertia, supply chains were subjected to the potential loss of competitiveness due to the inability to keep up with market changes (GLIGOR et al., 2018).

Consequently, organizational inertia, stemming primarily from the supply chain function (especially in manufacturing), was a direct consequence of insufficient investment in both maintenance, which affected the ability to meet operational and financial benchmarks, and innovation to remain competitive in the face of evolving market dynamics. From the previous dynamic mentioned, the "non-bag" supply chain products and manufacturing lines were impacted by this effect even when there was no formal distinction between "bag" and "non-bag" products. Therefore, considering that the

market in which the studied company operates is relatively stable, the second proposition is established:

Proposition 2: A fully integrated collaboration and governance model, while effectively balancing the value generated across various supply chains, may lead to minimal resource allocation conflicts and potential organizational inertia in non-prioritized supply chains. This inertia can reduce competitiveness (e.g., efficiency, innovation, responsiveness, etc.) and impact on a long-term strategy.

Similarly, for supply chains that receive the needed resources from coopetition, competitiveness is maintained through the ability to keep them innovative or efficient based on operational and financial criteria. When this collaboration and governance model changes within the spectrum of coopetition, distinguishing between independent production plants (T01 period) and those with a certain degree of separation (T02), it escalates tension due to the competitive dynamics it introduces. In line with Jarzabkowski et al. (2013), a high level of competition can be identified after organizational restructuring that separates divisional units.

This increase in tension is also motivated by a paradoxical scenario faced by individuals within the organization. There is an amplified competition for scarce resources, identified in this study as financial resources, technical capabilities, and supply chain maintainability (e.g., higher safety stocks). On the other hand, there is pressure for joint improvement among units, strengthening the overall business. Paradoxically, headcount spending increases due to duplication of organizational structures and the loss of synergies in cross-functional areas, such as planning.

It is within this intraorganizational context that mediating elements begin to gain more prominence and importance. These elements include financial metrics or quantitative indicators, which were used to foster impartiality when making decisions during more competitive periods.

The prevalence of these metrics aligns with the transaction cost theory's focus on economic efficiency and waste reduction. Indeed, having a "clear filter" for product launches and portfolio management, as mentioned by some interviewees, underscores the

need for objectivity in connecting economic efficiency with productivity (KETOKIVI; MAHONEY, 2020). However, these metrics also intensify tensions regarding how the created value is distributed among different supply chains.

It's worth noting that even in a strategy that may seem to revert to what could be considered as "integration" during period T02, the concept of separation within supply chains persists in the perspective of supply chain actors, as observed in the company under study. At this point, an additional effect emerges, replacing organizational inertia in the cooperative governance and collaboration model. This effect impacts supply chains that aren't prioritized in resource allocation. It can be likened to a "strangulation" effect on supply chains due to resource withdrawal, technical capability reductions, and the inability to meet customer needs.

Beyond financial resources scarcity in the "non-bag" supply chain, one can mention the loss of technical competence - which was also directed toward the "bag" supply chain - and the reduced ability to respond to demand variations due to reduced safety stock. Here, the concept of asset specificity from transaction cost theory comes into play.

During moment T02, in contrast to T01, the focus on asset specificity exclusively centered on the "bag" supply chain. This strategic shift can be seen as an attempt to mitigate the transaction costs that persisted when organizational structures were initially configured to accommodate this specialization during T01, even though it was no longer present in the final restructuring at T02.

The redirection of resources to the "bag" supply chain in this period resulted in the concept described in this study as supply chain strangulation, which replaces the organizational inertia in the cooperative governance and collaboration model. However, the speed at which the impact manifests in the organization was a difference observed.

In other words, even though it is as detrimental as supply chain strangulation, organizational inertia in this study seemed to have a gradual and enduring impact. Thus, it would possible to assume the persistence of this scenario until, in the context of global value creation, the results become insufficient to compensate for the inefficiencies of some supply chains, or artificially, when the organization realigns its strategy and changes, for example, its model of collaboration and governance, through a structural

change. For this reason, an association was made between the effect of this impact and the potential long-term market loss.

On the other hand, the supply chain strangulation effect demonstrated a more immediate impact on the supply chains with product deletion at the end. However, part of this swiftness observed in the supply chain strangulation effect seems to be associated with the role played by mediating elements in resource allocation decisions, which in this study were financial metrics and quantitative indicators, reflecting the company's orientation toward efficiency. During period T01, the mediators gained more relevance as neutral elements. In T02, they were established and contributed to guiding the decision about product deletion, which impacted the most niche accessory products that were part of the "non-bag" supply chain.

In other words, as the inefficiency of a supply chain is evidenced through organizationally established and socially accepted mediators, the pressure for decision-making increases, even if that decision is, in the short or medium term, the discontinuation of a supply chain or part of it represented by a portion of products in the current portfolio.

Hence, the third proposition established in this study is as follows:

Proposition 3: In a collaboration and governance model that is either completely separated or partially integrated, the separation of value generated by various supply chains results in greater tension in the scarce resources allocation. Consequently, mediating elements come into play in decisions that might ultimately lead to the strangulation of non-prioritized supply chains.

However, the pressure exerted by mediating elements can lead to a quicker decision for product deletion than the ability to allocate the value of that set of products impacted to another supply chain. Consequently, if discontinuation occurs before value reallocation, the organization might suffer a loss of market share, which could be challenging to recover in the medium term. This situation can arise due to operational and financial constraints imposed by mediators or the competitive barrier created by rivals who capture the market share lost due to discontinuation.

In this context, Resource-Based View (RBV) and Transaction Cost Theory (TCT) offer complementary insights, particularly when value reallocation involves outsourcing, as in the case of the studied company. Firstly, RBV helps distinguish between core and non-core supply chains, shedding light on which elements are more suitable for outsourcing (MCIVOR, 2009), i.e., non-core products. Second, it underscores the role of bounded rationality in decision-making regarding product deletion, especially when the reallocation of value to a third-party supplier involves technological uncertainties related to quality and price, not known ex-ante (KETOKIVI; MAHONEY, 2020).

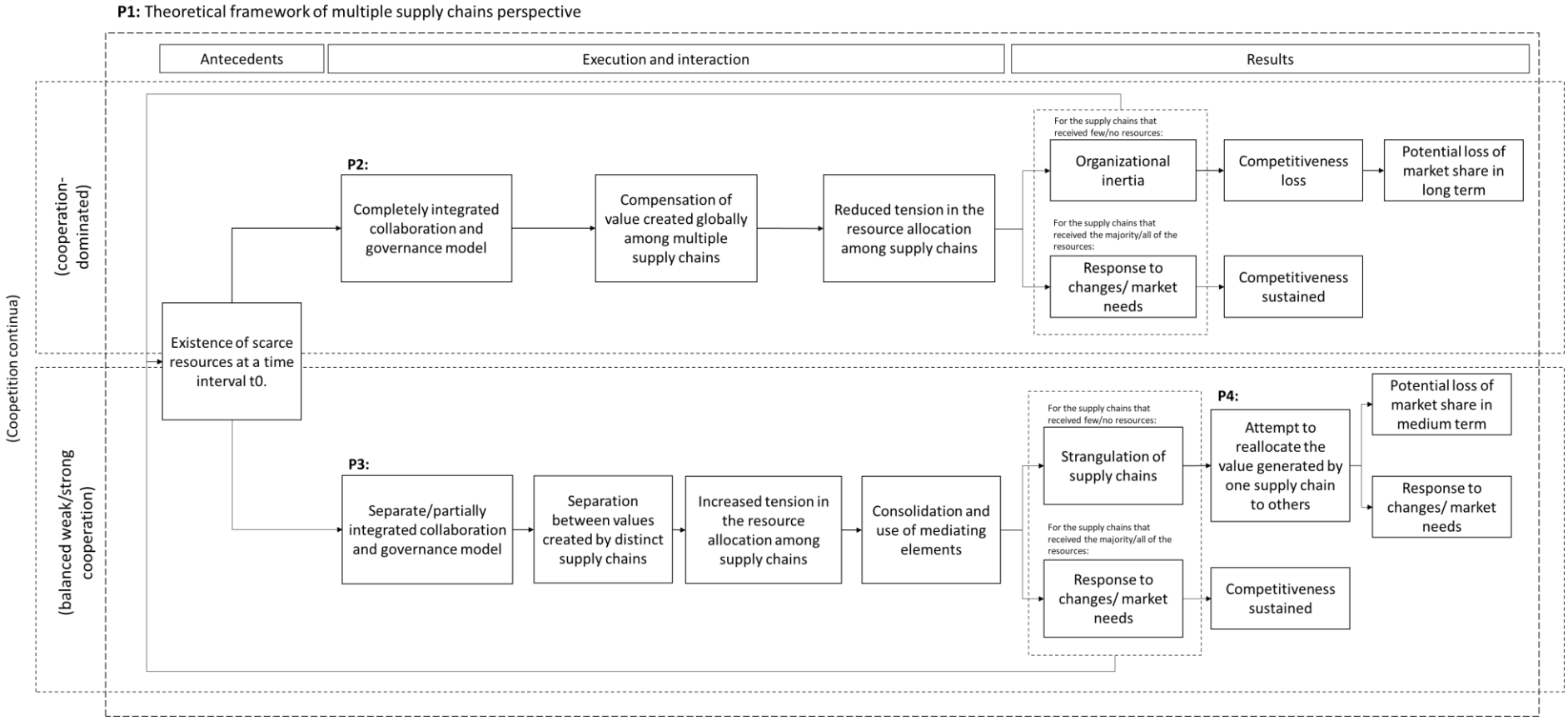
Thus, the lack of clarity about these transaction costs and the potential barriers they imply for reallocating value from constrained supply chains can lead to a loss of competitiveness, resulting in a market loss in a shorter timeframe than observed in the organizational inertia dynamics.

Therefore, the proposition four is established:

Proposition 4: Supply chain strangulation may lead to a search for the reallocation of value generated by the previously discontinued supply chain to another supply chain (for example, from local production to outsourcing or vice versa). Failing to do so could lead to a potential loss of market share in the medium term.

Finally, to illustrate the interrelation between the concepts used and the propositions established, Figure 7.3 was developed.

Figure 7.3 - Framework of intraorganizational coopetition process among multiple supply chains based on different governance and collaboration models



7.7 Conclusions

7.7.1 Final Remarks

The present study has explored the occurrence and evolution of coopetition among multiple supply chains within a multinational corporation. It has identified how governance and collaboration models have evolved over time, the tensions involved, and the impacts on the studied organization, all while engaging with the coopetition literature with support of resource-based and transaction costs lenses. In conclusion, this study has demonstrated that a change in organizational structure can be assumed as a driver for reconfiguring governance and collaboration models and altering the interaction dynamics among units, resulting in different degrees of tension.

Moreover, it can be regarded as a catalyst for viewing the organization from the perspective of multiple supply chains. During integration and separation periods, differences among the various supply chains within an organization become evident, giving rise to distinct management approaches and intensifying competition for scarce resources.

As a result, two primary mechanisms have emerged from the competition for scarce resources among multiple supply chains. One of these mechanisms operates within a context of cooperation-dominant, where the value created by multiple supply chains is compensated among all supply chains. This approach reduces tension in resource distribution but seems to create the risk of organizational inertia for supply chains with little or no investment, ultimately leading to long-term competitiveness loss.

On the other hand, a second mechanism involves a balanced weak or strong cooperation governance and collaboration model, leading to the separation of the value created by different supply chains. This results in increased competition and tension over resource allocation, potentially leading to what this study terms "supply chain strangulation," where the organization pressures the discontinuation of a particular supply chain due to its inability to deliver the expected operational or financial return to the company.

However, in this situation, a significant challenge arises. When the company discontinues a specific supply chain, it can result in both a market and a strategic gap.

This impact occurs when the value generated by the products within this supply chain is not redirected to another supply chain inside or outside the organization.

7.7.2 Contributions to Practice and Theory

Although the study is based on a single case, the developed model provides a foundation for analytical generalization, offering both the model itself and propositions to be observed and replicated in future studies (ALVES-MAZZOTTI, 2006; YIN, 2013).

This study also explores the perspective of multiple supply chains. Traditionally, the supply chain has been viewed from the perspective of a closed echelon, in which each organization involved, assuming a role as a buyer or supplier, comprises this network of inter-organizational relationships (LAMBERT; ENZ, 2017).

However, this study has demonstrated that the perspective of multiple supply chains not only allows managing the various flows that traverse the organization but also reveals supply chain phenomena that are not visible from the traditional view of the supply chain, such as the case of coopetition among supply chains.

Thus, this study empirically supports Carter et al. (2015) proposition regarding the product-agent relativism of the supply chain concept. Furthermore, the study highlights the role of humans in designing supply chain management as a social concept through language and discourse (ESPER et al., 2010; TSVETKOVA, 2021).

Regarding the coopetition topic, the study unveils the intraorganizational unit of analysis within the supply chain, as studies addressing coopetition in the supply chain context have traditionally focused on inter-organizational scopes. The literature within this scope has focused on coopetition among innovation or new product development groups. Thus, the research also contributes to highlighting the existence of intraorganizational coopetition with a focus on supply chain processes, particularly planning, which is a gap identified by Amata et al. (2021).

It also demonstrates the evolving characteristic of coopetition, first from manufacturing plants and after from multiple supply chains. Thus, it was possible to observe that when the company changed its organizational structure, the coopetition remained present at a different level of analysis, ultimately leading to the product deletion from the "non-bag" supply chain in T02.

This result raises questions about the isolation of the effect across multiple levels where coopetition can be observed. In summary, it prompts the question: To what extent does the coopetition at one level remain at that level, or has the coopetition evolved to be examined at another?

Furthermore, this study explores specific coopetition concepts in the intraorganizational context. These concepts include governance and collaboration models, integration, separation, and mediation logic, tensions, the coopetition continua, logics of value creation and appropriation generated by multiple supply chains, and coopetition drivers, such as competition for scarce resources and potential outcomes.

The study also utilizes the resource-based view and transaction cost theory to contribute to understanding the phenomenon manifested over time and to enhance the comprehension of the reasons for choosing the separation between "bag" and "non-bag" supply chains at time T01, about the concept of core competence from the resource-based view. Additionally, associated with this concept, the decision to discontinue a significant part of the products within the "non-bag" supply chain is discussed and supported by this lens.

Transaction cost theory serves as a lens to aid in understanding the bias towards efficiency from time T01 through financial indicators that contributed to isolating the creation and distribution of value generated by supply chains, which persisted into time T02. Furthermore, concerning time T02, the shift back to integrated structures and the redirection of technical resources from "non-bag" supply chains to the "bag" supply chain can be viewed as ways to reduce asset specificity, which increases transaction costs, and maintaining asset specificity solely within the "bag" supply chain.

Additionally, for practical implications, this study reveals several points of consideration. One of these points lies in the role of organizational structure changes in shaping internal coopetition through governance and collaboration mechanisms within the affected areas. Moreover, it highlights the persistence of a mode of operation even with changes in the organizational structure; for example, in the case examined, even when supply chains were reintegrated in time T02, the separation mindset persisted without this characteristic being part of the formal organizational chart.

Another point concerns the phenomena that pose a risk of losing market share due to the loss of supply chain competitiveness. This phenomenon can occur through

organizational inertia, where the compensation of value created globally hides the lack of investment to keep a particular supply chain, or through the strangulation of supply chains, which can exert pressure on performance that initially leads to an organizational consensus regarding discontinuation, but also does not accommodate the reallocation of value generated by that supply chain to others, potentially resulting in market loss and making it more difficult to regain market share in the future.

A possible bias noted in the research is associated with the belief that financial indicators would serve as impartial mediators for decision-making. Indeed, an organization relies on priority indicators that reveal whether it is developing according to the established goals. However, it would be incomplete to use financial indicators as the sole criterion for resource allocation decisions, comparing the relevance of supply chains responsible for the company's core products with those that complement the organizational portfolio because the contribution tends to be not proportional.

Another potential practical implication to be further explored in future research is the impact of discontinuing a particular supply chain for the suppliers. Depending on the specificity of the discontinued supply chain, it may directly impact suppliers who rely on it as their primary source of supply.

7.7.3 Limitations and Future Studies

Despite the contributions outlined, this study has limitations. One limitation pertains to handling process data, a challenge highlighted by Langley (1999). In this vein, the limitation arises from the scope chosen based on theory, adopted concepts, analyzed levels, and the timeframe considered to describe the phenomenon. Thus, it can be stated that, although a model was ultimately developed to understand the mechanism of coopetition within the supply chain, there are potential temporal inaccuracies and overlaps in the levels of analysis resulting from the difficulties in isolating each element every time.

For example, in this case, there is a perceived overlap between coopetition among subunits and supply chains (e.g., a transition to subunits to value chains in T01), which at some points intersect in the evolution of how supply chain processes are managed within the organization. Furthermore, there is overlap across levels driven by concepts like

"tension," which is applicable both to divisional units during T01 and to groups of individuals responsible for managing various supply chains during T02.

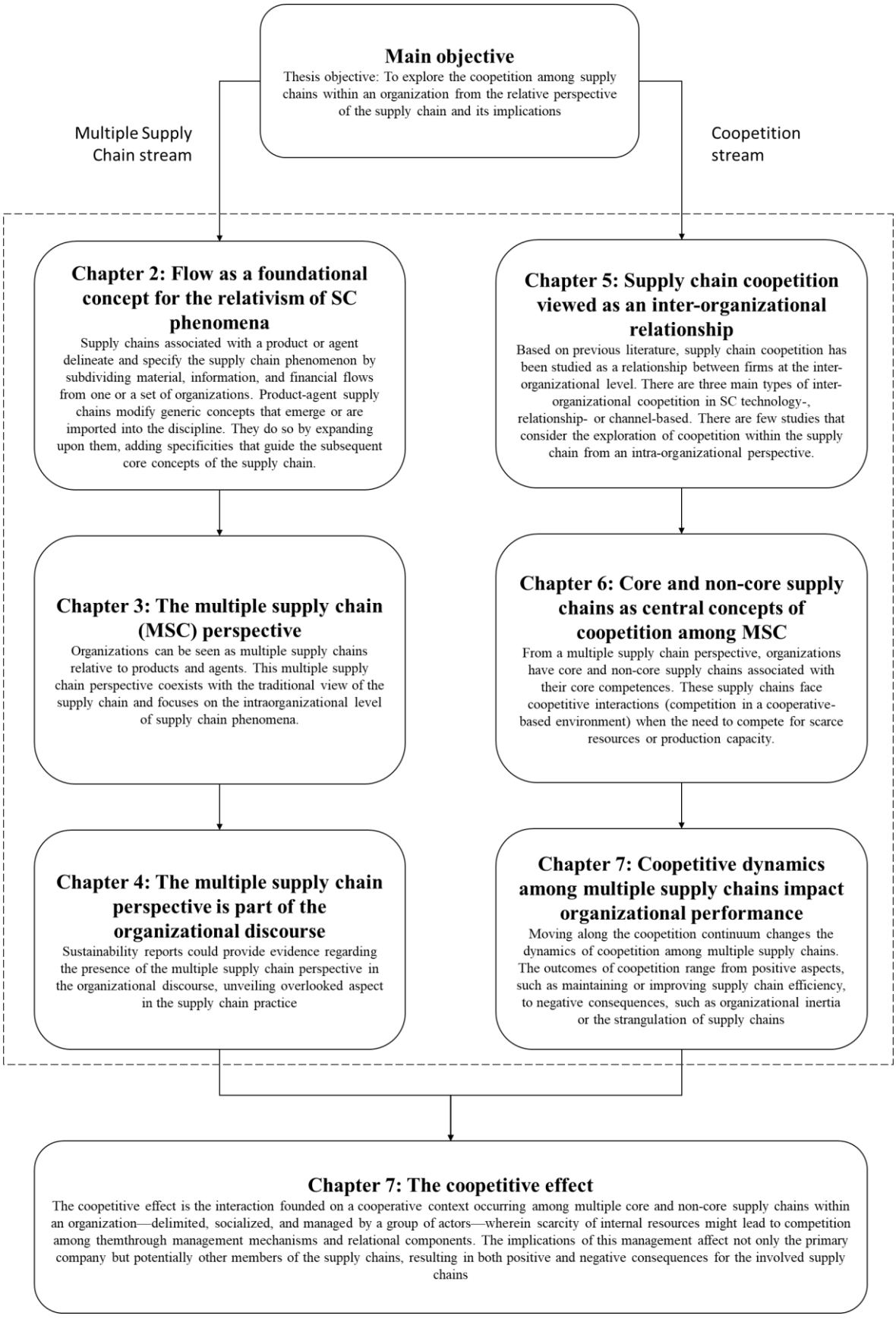
Therefore, future studies may explore the nuances of each concept across various organizational levels within the context presented by the study's model. Finally, it is recommended to empirically explore the perspective of multiple supply chains, which, as evidenced by the presented case, seem to play a significant role in supply chain management with impacts on both operations and other areas such as marketing and finance.

8 THESIS CONTRIBUTIONS AND FINAL REMARKS

This thesis originated from the aim of exploring coopetition among supply chains within an organization from the perspective of the supply chain itself and its implications. Being organized into six articles, this study has two main streams. This thesis has contributed to both theory and practice in various ways, as detailed and outlined in the preceding chapters. However, in this final chapter, through Figure 8.1, the broader contribution of the thesis as a whole is presented, elucidating the connections among central aspects of the articles, and resulting in the formulation of the concept of the coopetitive effect.

The first aspect involves the notion of flow as a foundational concept for the relativism of the supply chain phenomenon. Carter, Rogers and Choi (2015) introduce the premise of supply chain relativism to a particular product or agent. As discussed in Chapter 2, this premise is associated with the supply chain phenomenon, which is grounded in the idea of flow. Together with other elements such as strategy and supply chain structure, flow shapes a more comprehensive understanding of this business phenomenon. Within the context of product supply chains, the primary flow is that of materials, which is intertwined with financial and information flows. Another point stemming from this aspect involves the need, as also emphasized by Carter, Rogers and Choi (2015), to make the conceptualization of the supply chain manageable by specifying it. Thus, what is observed from this thesis is that it is through the idea of flow that the materialization and manageability of product-agent relativism within the supply chain become possible.

Figure 8.1 – Summary of the thesis contributions based on the articles created.



In this way, the product-agent relativism of the supply chain materialized through the idea of flow, provides a theoretical framework for framing studies within the field, and contributes to delineating the object of investigation.

A second aspect involves the formalization of what has been conceptualized in this study as the perspective of multiple supply chains. Despite being present as a term in Gattorna (2006) and even in Carter, Rogers and Choi (2015), there has not been an association between what this observation represented in terms of characterizing the supply chain, as the way the supply chain is characterized still relies on the predominant view of links and connections.

Moreover, being observable as a relative phenomenon associated with organizational flows, characterizing the supply chain based on the structure of nodes and links becomes a possible way to perceive the phenomenon, with an inter-organizational focus, but not the only one. In this sense, the supply chain is present within the organization, meaning it is also an intraorganizational phenomenon even though it is not limited to this level. Thus, Chapter 3 elaborates on how different ways of characterizing and observing the supply chain can coexist from alternative perspectives.

Consequently, three perspectives of viewing the supply chain are systematized and combined. The first considers the view of closed nodes and links, corresponding to the traditional and predominant view observed in the literature (Lambert and Enz, 2017). The second indicates the multi-level perspective of the supply chain, which was presented by Carter, Meschnig and Kaufmann (2015). Finally, the third is the perspective of multiple supply chains, the focus of this thesis.

Subsequently, in Chapter 4, examples illustrating the existence of the perspective of multiple supply chains as part of organizational discourse are presented from various types of companies, providing empirical evidence from organizational documents—specifically, sustainability reports. Approaching the idea of organizational discourse, the association of this perspective with language is observed, as language becomes the means through which the phenomenon of the supply chain becomes materialized and observable from agents. In this association, both language (Mufwene, 2013; Massip-Bonet, 2013) and the supply chain (Carter, Rogers and Choi, 2015) can be seen as complex adaptive systems, contributing to studies of the supply chain within this theory that may also consider language as a data source.

Furthermore, as part of organizational discourse, more than just a linguistic mechanism, the perspective of multiple supply chains approaches a way of thinking about the supply chain itself. In this sense, it is a form of social construction of reality that fosters cohesion among its members (GRANT; KEENOY; OSWICK, 2001). Thus, it brings to the forefront the human role in constructing and attributing meaning to the phenomenon.

This observation generates another implication: while it's possible to define and manage supply chains through language, it suggests that one of the roles of supply chain management professionals involves being attentive to how the term emerges within organizations, acting not only in strategic delineation but also in consciously redirecting terminological usage as per the dynamism and needs of the moment.

Thus, considering the contributions of chapters 2, 3, and 4, the necessary theoretical framework is established to investigate coopetition among multiple supply chains, which is a form of interaction for which there is a theoretical possibility of occurrence within companies as articulated in the introduction chapter, but empirical evidence had not been observed. Nor was it clear whether the concepts of coopetition could be observed within this unexplored level within this topic.

In this way, the first effort into this line of investigation was through a systematic literature review, which was conducted considering the theme of coopetition in the supply chain (Chapter 5). Indeed, what was observed and noted is that the literature addresses the concept of coopetition in the supply chain at the inter-organizational analysis level. This fact becomes more evident with the study by Katsaliaki, Kumar and Loulos (2023), which systematizes structures, mechanisms, and dynamics within this level of analysis.

However, even though the presence at the intraorganizational level was not observed, the systematic review conducted within this thesis could contribute to revealing the existence of three distinct forms of coopetition: technology-based, relationship-based, and channel-based. For each of these cases, there are antecedents, practices, and outcomes of coopetition that are most frequent and supply chains in which there is a greater tendency for each of these forms to manifest.

Considering the intraorganizational gap, Chapter 6 explores coopetition among multiple supply chains through three case studies comparing it with the inter-organizational context of the supply chain. Thus, what was ultimately observed was that,

although coopetition can be observed among multiple supply chains, the way coopetition occurs tends to differ from that of inter-organizational coopetition.

The first aspect involves the interactional basis of the relationship. While in inter-organizational coopetition competition predominates, for intraorganizational coopetition, cooperation predominates. This characteristic can alter the way coopetitive dynamics occur.

It also brings to the debate the role of coopetition unity as a field of knowledge. By distancing itself from inter-organizational coopetition in various aspects – for example, exclusive competition for customers in the market (CHIAMBARETTO; FERNANDEZ; LE ROY, 2022) – what should be the elements that, combined, are general enough to encompass both levels of analysis, but specific enough to characterize the hard core and the main themes that form the protective belt of the research program in this area? This gap is still an open question that this thesis can contribute to by revealing the similarities between these levels of analysis.

For example, the concept of paradox associated with the coexisting relationship between cooperation and competition with its association with the idea of the coopetition continuum is broad enough to encompass both inter- and intraorganizational coopetition, while also becoming specific to the topic of coopetition. The idea of scarce tangible and intangible resources can be taken as a generalization of competition for customers (CHIAMBARETTO; FERNANDEZ; LE ROY, 2022).

Additionally, the counterpoint between strategy and relationship would be another aspect to be observed from the results of this study and, in combination with the intraorganizational aspect of coopetition. Thus, it would be possible to conceptualize coopetition primarily as a potential form of relationship that may or may not lead to a deliberate strategy. Thus, although the discipline's origin was based on formulating coopetition as a strategy (NALEBUFF; BRANDENBURGER, 1996), what can be understood here is that the form of relationship – occurring or not occurring – precedes strategy formulation. This is what intraorganizational coopetition – referring to the study in Chapter 6 – can reveal. Thus, coopetition becomes a category of organizational relationship for which a strategy may or may not be elaborated and implemented. Therefore, initially being a relationship category, its occurrence could be observed without a deliberate strategy.

Finally, Chapter 6 also revealed a concept that proved relevant to investigating coopetition among multiple supply chains, which was the concept of core and non-core supply chains. The concept of core and non-core supply chains aligns with the idea of core competence present in the resource-based view, which is one of the most popular theoretical lenses within the field of supply chain management (GLIGOR et al., 2018).

Thus, core supply chains would be those associated with the company's primary value proposition - the one considered most valuable and needing protection. Conversely, non-core supply chains, as an opposing linguistic construction, would encompass all other multiple supply chains - with varying degrees of segmentation - that complement the company's value proposition to the market but do not correspond to the core competence of the business. Product supply chains are associated with one or more products or product categories and their associated flows. What was observed in the analyzed cases is the primary occurrence of coopetition between these core and non-core supply chains, occurring through the dimensions of resource scarcity, management mechanisms and relational components.

Finally, in line with the previous study, Chapter 7 deepens the investigation of intraorganizational coopetition among multiple supply chains for a case and observes it over time through a retrospective study. In this case, more than just identifying the occurrence of elements of inter-organizational coopetition in the intraorganizational context for the supply chain, the study analyzed how these elements of coopetition - for example, collaboration and governance models, tensions, mediating elements, integration, and separation - articulate and change based on changes in organizational structure.

Thus, it was possible to observe what is formalized in this thesis as a coopetitive effect: the interaction founded on a cooperative context occurring among multiple supply chains (core and non-core supply chains) within an organization - delimited, socialized, and managed by a group of actors – in which the scarcity of internal resources and organizational structural changes might lead to competition among them through management mechanisms and relational components. The implications of this management affect not only the primary company but also potentially other members of the supply chains, resulting in both positive and negative consequences for the involved supply chains.

These implications reside within the organization's performance results. Thus, on the one hand, coopetition has demonstrated a relevant role in maintaining the competitiveness of some supply chains by providing necessary resources for them to address market needs. On the other hand, it can negatively impact in two ways: through organizational inertia or the concept developed in this thesis of supply chain strangulation. Organizational inertia is a direct consequence of insufficient investment in both maintenance, which affects the ability to meet operational and financial benchmarks, and innovation, which remains competitive in the face of evolving market dynamics with a gradual and enduring impact.

The concept of supply chain strangulation emerges from the influence of coopetitive dynamics on supply chains that lack the essential resources to maintain their competitiveness, both within their organization and externally in the market. Consequently, this deficiency impairs their ability to function efficiently and compete effectively in the market environment. This effect can be attributed to the mass deletion of a set of products/services from the company's portfolio associated with that specific supply chain.

In this way, considering the managerial contribution of this study, by proposing the concept of the coopetitive effect as a result of the studied cases, this study provides an opportunity for managers to deal consciously with this type of interaction, channeling the observed rationality into the dimensions of coopetitive dynamics.

On a normative side, regarding intraorganizational coopetition among multiple supply chains, it highlights coopetition characteristics as the role of the division between the core and non-core supply chains of the organization as well as the associated power asymmetry, changes in organizational structure, and the role of shifting coopetitive dynamics within the continuum of coopetition. It emphasizes the presence of mediating elements capable of balancing the creation of global and individual value of supply chains, the design of processes considering trade-offs between the integration and separation of supply chains, the interdependence between products and associated supply chains during the development of new products, and the caution in basing coopetitive interaction solely on the relational element of trust. Table 8.1 provides practical recommendations to approach these characteristics.

Table 8.1 – Practical recommendations to address coopetition among multiple supply chains

Coopetition charact.	Practical recommendations
Core and non-core supply chains – the power asymmetry between them	1. Map both the core and non-core supply chains of the organization to facilitate the identification of power dynamics. 2. Establish "strategic supply chains" as a subset of non-core supply chains to prevent organizational inertia or strangulation for promising supply chains and associated products.
Changes in organizational structure – moving the dynamics along the continuum of coopetition	3. Evaluate changes in organizational structure through the coopetition lens continuum and anticipate how these changes can shift the interactions between supply chains. 4. For a balanced weak cooperation shift: Assess the level of interdependence between supply chains to verify the frequency of coopetitive events and determine the minimum level of resources required to sustain the supply chain. 5. For a cooperation-dominant shift: Define the financial and operational efficiency necessary to secure the supply chain's independence of resources from others.
Mediating elements – the need of balancing the creation of global and individual value of supply chains	6. Define mediating elements capable of capturing both the individual contributions and the global value created by the supply chains. 7. Develop aggregated measures to assess the contributions of multiple supply chains and integrate them into the supply chain processes.
Design of processes for integration and separation of supply chains	8. Identify organizational processes susceptible to coopetitive events. 9. Review the resources and committees that need to be integrated and determine what can be managed separately. 10. Define the management of coopetitive events, including the application of rules, escalation of conflicts, and selection of mediators for final decisions.
Design new products with coopetitive mindset	11. Map the critical raw materials supply chains and production bottlenecks. 12. Measure the level of interdependence of the new product and its supply chain with other supply chains, as well as the dependence on these critical elements.
Trust – fundamental but part of the coopetitive process	13. Reduce reliance solely on trust to resolve coopetitive events by establishing a formal process that recognizes and provides management tools to address them.

Thus, managers can adopt a promising approach by initiating the management or development of a strategy for intraorganizational coopetition based on these elements. Despite the obtained results and contributions, this thesis has limitations. Throughout the

chapters, detailed limitations were identified for each study. As a recommendation for future research, it is suggested to explore what other effects can be observed within the perspective of multiple supply chains and what implications they might generate for the business.

Moreover, exploring the coopetitive effect from other standpoints is recommended, as the current study focused on a consumer goods supply chain, emphasizing efficiency and considering the focal company's perspective. However, numerous other possibilities exist and can be explored. For instance, studying the interaction between supply chains focusing on sustainability might reveal a different type of dynamic compared to what was presented.

Additionally, investigating coopetition in other contexts might reveal the need to expand the conceptual model created and include concepts that encompass different situations not captured within this study. Additionally, considering the formulation of the strangulation of supply chain concept, exploring other examples where this consequence can be observed is suggested to understand whether the reallocation of value from the strangulated supply chain can be done to mitigate the associated negative impacts, such as market and positioning loss.

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Appendix

Universidade Federal de São Carlos
Departamento de Engenharia de Produção
Programa de Pós-Graduação em Engenharia de Produção

CARTA DE APRESENTAÇÃO DO PROJETO

Prezado(a) Sr.(a.),

O projeto de estudo “Coopetição em cadeias de suprimentos” conduzido pelo pesquisador Maicom Sergio Brandão sob orientação do professor doutor Moacir Godinho-Filho tem por objetivo investigar como áreas funcionais, unidades organizacionais e cadeias de suprimentos interagem entre si dentro do contexto das atividades da cadeia de suprimentos.

Parte importante do estudo é a pesquisa de campo feita com gestores de empresas que atuem dentro de áreas funcionais e que desempenham atividades enquadradas como de cadeia de suprimentos. Por adotar uma abordagem de pesquisa qualitativa, a participação de cada gestor é importante para entender, a partir das suas experiências e pontos de vista, como interações intraorganizacionais podem impactar o desempenho da empresa.

Sendo assim, convido-o(a) para participar desse estudo como entrevistado.

A participação é sigilosa e todas as informações fornecidas durante a entrevista ou posteriormente por meio de outro material documental são mantidas de forma confidencial. Não há nenhum custo ou remuneração pela participação na pesquisa.

Após o encerramento do estudo (previsto para final de 2023) será fornecido aos participantes um resumo executivo com os resultados da pesquisa.

Cordialmente,

Maicom Sergio Brandão
Pós-graduando em engenharia de produção

Universidade Federal de São Carlos
Departamento de Engenharia de Produção
Programa de Pós-Graduação em Engenharia de Produção

TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO

Convidamos o(a) senhor(a) para participar da pesquisa "Coopetição em cadeias de suprimentos" conduzido pelo pesquisador Maicom Sergio Brandão sob orientação do professor doutor Moacir Godinho-Filho tem por objetivo investigar como áreas funcionais, unidades organizacionais e cadeias de suprimentos interagem entre si dentro do contexto das atividades da cadeia de suprimentos. Sua participação é voluntária e se dará por meio de uma entrevista com o pesquisador. O tempo previsto para a entrevista é de aproximadamente 1 hora. Como participante da pesquisa, declaro que concordo ser entrevistado pelo pesquisador de forma online, ( ) permitindo/ ( ) não permitindo a gravação da entrevista, que pode ser indicado na confirmação de participação. O objetivo da gravação é realizar uma transcrição da entrevista e posterior análise de conteúdo por meio de softwares específicos para esse tipo de pesquisa.

Se depois de consentir sua participação, o(a) senhor(a) desistir de continuar participando, tem o direito e liberdade de retirar seu consentimento em qualquer fase da pesquisa, seja antes ou depois da coleta de dados, independente do motivo e sem prejuízo para sua pessoa. O(A) senhor(a) também não terá nenhum custo ou remuneração com sua participação. Os dados das entrevistas e demais documentos serão armazenados de forma particular pelo pesquisador, mantendo-os para fins exclusivos da pesquisa. Os resultados serão publicados em formato de tese, de divulgação científica e também por meio de artigos científicos, mas sua identidade e da empresa serão mantidas de forma sigilosa.

Para qualquer outra informação, o(a) senhor(a) pode entrar em contato com o pesquisador no endereço maicom@estudante.ufscar.br ou pelo celular (16) 99455-9119. Esse documento será utilizado como descritivo do uso das informações e seu consentimento pode ser dado por um "DE ACORDO" no e-mail de comunicação.

Cordialmente,

Maicom Sergio Brandão
Pós-graduando em engenharia de produção

Interview protocol

1. **Organization and Supply Chain Context**
    a. Basic company background (facts and figures);
    b. Interviewee's background: Role, years with the company, main activities performed, responsibilities, position within the organizational chart;
    c. Conceptual alignment: Definition of the supply chain by Mentzer et al. (2001) and supply chain processes (SCOR + Lambert et al.);
    d. Identification of supply chains: What supply chains exist within the organization? What organizational units exist within the organization?
    e. Understanding of scope: Why do you define the supply chains in this way? Are there other delineations within the organization? If yes, do you know the reasons?
    f. Representation: What is the significance of these chains for the organization's performance/results? And for the organizational units (No need to provide values, it can be comparative, e.g. primary, high, medium, low, etc.).

2. **Coopetition in Intra-organizational Supply Chains**
    a. How do you perceive the interaction between these supply chains/your area and others involved in supply chain processes? And between the organizational units? Harmonious (cooperative - not mentioned at this moment), disharmonious (competitive - not mentioned at this moment), a mix of both (coopetitive - not mentioned at this moment); b. Why do you think this happens? (Why?);
    b. How does this interaction occur? (How?);
    c. What is involved in this interaction (What?);
    d. Who is involved in this interaction (Who?);
    e. In what context or when do these types of interactions tend to occur? (When?); and
    f. What is the result of this interaction? Do you see positive and/or negative points? Which ones? And on what scale (operational, tactical, strategic)? (What?).