

Theorizing Supply Chain Management and Logistics Research: A Comprehensive Review of Trends, Gaps, and Future Directions

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ABSTRACT

This study aims to explore the development and application of theory in logistics and supply chain management (SCM) research from 2010 to 2022. It examines the frequency and diversity of theory to uncover trends and patterns in academic discourse. A broad systematic review of five prominent journals in the field of logistics and SCM was conducted. The objective was to determine the frequency of theory application and to categorize the specific theories used. The paper presents an analysis of these theory categories to highlight the nature and frequency of theory application. The study shows that certain theories have become more prevalent over time, while others have become less relevant. It highlights the diversity of theories in use and illustrates how their use has evolved in the context of changing global and technological trends. Our findings underscore the importance of theoretical foundations for effective logistics and SCM strategies and advocate the application of relevant theories in practice. The article provides a unique perspective on the evolution of discipline and serves as a guide for future research directions in the field.

Keywords: *literature review, logistics, supply chain management, theorizing, theory development*

1. INTRODUCTION

The application and development of theory is critical in management and organizational research (Eisenhardt, 1989; Sandberg and Alvesson, 2021) and has significantly advanced the maturity of the discipline (Kuhn, 1962; Whetten, 1989; Defee *et al.*, 2010; Liu and McKinnon, 2016). In logistics and supply chain management (SCM), there has been a growing emphasis on rigorous, theory-driven research to establish SCM as a respected field, reflecting its interdisciplinary and practical nature (Kuhn, 1962; Swanson *et al.*, 2020; Carter, 2011; Fawcett and Waller, 2011; Halldórsson *et al.*, 2015; Mentzer and Kahn, 1995; Speier *et al.*, 2008; Swanson *et al.*, 2017; Liu and McKinnon, 2016; Liu and McKinnon, 2018). Furthermore,

many scholars have also highlighted the growing need for theory development within SCM research (Halldórsson *et al.*, 2015; Liu and McKinnon, 2016; Carter, 2011; Defee *et al.*, 2010; Fawcett and Waller, 2011; Frankel *et al.*, 2008; Wacker, 2008). Similarly, the field of logistics has evolved from a primarily descriptive discipline to one based on a robust theoretical foundation for defining, explaining, and understanding complex relationships among phenomena (Stank *et al.*, 2017; Defee *et al.*, 2010; Golicic and Mentzer, 2011).

Most theories have a dominant explanatory meaning (Sandberg and Alvesson, 2021) that can limit knowledge generation that does not align with that meaning, leading scholars to force-fit knowledge to claim theoretical contributions (Symon *et al.*, 2018; Abend *et al.*, 2013). Alternatively, researchers may opt for more interpretive or descriptive approaches that avoid these constraints (Patriotta and Gruber, 2015; Sandberg and Alvesson, 2021). Reviewing and discussing existing theories within a discipline can refine theoretical contributions and improve fit, supporting multidimensional research. This approach is particularly useful in LSCM, facilitating the exploration of theory combinations or extensions. Recent years have witnessed a proliferation of studies in logistics and SCM (LSCM), enriched by different theoretical perspectives (Richey *et al.*, 2022; Defee *et al.*, 2010). The field of LSCM is increasingly influenced by rapid changes such as digitalization and a focus on sustainability, which require the integration of advanced technologies and sustainable practices (Christopher and Holweg, 2017; Wieland, 2021; Attaran, 2020; Choi *et al.*, 2022; Fischer and Papert, 2024; Goertler *et al.*, 2023; Hofmann *et al.*, 2019; Ivanov *et al.*, 2021; Khan *et al.*, 2021; Pflaum *et al.*, 2018). LSCM involve coordination between marketing, finance, operations, and human resources, and benefit from borrowing theories from these fields to address complex supply chain challenges (Stock *et al.*, 2010; Defee and Stank, 2005). Developing unique theories tailored to the

specific needs and contexts of LSCM, such as global risks and sustainability challenges, is critical for effective management and for advancing the academic rigor of the field (Pagell and Wu, 2009; Mentzer *et al.*, 2001). In addition, the development of distinct theories encourages interdisciplinary research and collaboration, and promotes integration between SCM professionals and other fields (Carter and Easton, 2011; Stock *et al.*, 2010).

Against this background, we argue that an updated and comprehensive overview of the theories currently utilized in LSCM is not only timely but essential. Such an overview would facilitate further research by providing academics and practitioners with a clearer understanding of the theoretical frameworks that shape modern LSCM practices. The purpose of our study is to advance LSCM literature by analyzing the use of theory in LSCM research. Drawing on the study by Defee *et al.* (2010), the research objective is to provide an advanced overview of theories in LSCM from 2010 to 2022. Moreover, we aim to identify macroeconomic trends within the theories used. For this overview, we focus on five main journals from the LSCM discipline. Therefore, the following research questions (RQ) guide our study:

RQ1. *To what extent is theory used in LSCM research from 2010 to 2022?*

RQ2. *What are the dominant theories found in LSCM research and how did distribution evolve over time?*

Our understanding of “theory use” is that the author(s) use a theory to build research on it, or discuss the results based on a theory. We consider these articles to be theoretically grounded because they do not simply cite theory. In our study, we reviewed and analyzed 1,675 articles. The analysis findings indicate that 55.4% of the articles reviewed explicitly reference at least one existing theory. This demonstrates a 2.1% increase in theory application compared to Defee *et al.*'s (2010) study covering 2004–2009. Our findings indicate shifts in the 25 most frequently identified theories in LSCM. Therefore, the findings of our study make a contribution by providing an updated overview of theories in LSCM research and by highlighting trends within the theories used. They also contribute significantly to the current and ongoing discussion on theories and research performance in SCM (see Swanson *et al.*, 2017; Maloni *et al.*, 2021). Moreover, the results are relevant not only in the context of educating future SCM managers (see Brockhaus *et al.*, 2023), but also for evaluating research achievements so that SCM journals are more widely recognized by other business disciplines (see Maloni *et al.*, 2021; Maloni *et al.*, 2024).

2. MATERIALS & METHODS

2.1 Data and Scope

We conducted an extensive and systematic literature review of scientific LSCM publications from 2010 to 2022 in five influential journals: the *Journal of Business Logistics* (JBL), the *Transportation Journal* (TJ), the *Journal of Supply Chain Management* (JSCM), the *International Journal of Physical Distribution and Logistics Management* (IJPDLM), and the *International Journal of Logistics Management* (IJLM). The time period (2010 to 2022) directly follows the end date of the article by Defee *et al.* (2010) and the five scientific journals were adopted

from this article. During the period under review, JBL published 50 issues (267 articles), TJ 48 issues (219 articles), JSCM 52 issues (234 articles), IJPDLM 122 issues (513 articles), and IJLM 46 issues (514 articles), for a total of 1,747 articles. Editorials, commentaries and book reviews were excluded. During the coding process, we also excluded articles that relied on established, widely used framework concepts. These concepts are often process-oriented (e.g., just-in-time, just-in-sequence) or strategic in nature (e.g., Porter's value chain). Typically, they are widely used and serve as the cornerstone for conceptual research in the discipline and practical advice by practitioners (Defee *et al.*, 2010). While some of these concepts serve as the basis for research efforts, our assessment concluded that none of these concepts can achieve the status of theory because they lack the ability to explain and predict phenomena (Defee *et al.*, 2010). As there was no access available for a total of 72 articles, these were excluded from the sample. This comprised 44 articles from IJPDLM and 28 articles from TJ, which were already accounted for in the previously mentioned figures. Given that these 72 articles represent only 4.12 percent, they can be considered negligible. Therefore, the final number of articles analyzed and reviewed amounts to 1,675.

In line with Defee *et al.* (2010), the journals were selected based on their high rankings in published statistics (Gibson and Hanna, 2003; Harzing, 2023; Menachof *et al.*, 2009). In addition, three of these journals are associated with major professional organizations: JBL is affiliated with the Council of SCM Professionals, TJ with the American Society of Transportation and Logistics, and JSCM with the Institute of Supply Management (Defee *et al.*, 2010). These organizations share a common mission to advance knowledge for both academics and practitioners, and they facilitate regular interaction between researchers and practitioners through their publications and scheduled conferences (Defee *et al.*, 2010). This ongoing exchange ensures that scholars stay informed about current issues in the field and contributes to the relevance of future research (Mentzer, 2008; Defee *et al.*, 2010).

2.2 Data Coding

Following the approach of Swanson *et al.* (2020), each article was individually analyzed and coded by a team of researchers. To ensure a level of consistency and comparability, this study adheres to the methodology and framework used in previous literature reviews on theories in LSCM research (Defee *et al.*, 2010; Swanson *et al.*, 2020). We also used Hunt's (1991) definition of theory, which characterizes theory as a structured framework capable of explaining and predicting various phenomena. This served as the criterion for distinguishing works that are theoretically grounded from those that are not (“atheoretical”). When articles are theoretically grounded, the author(s) of the specific work use theory to either build research on it, or to discuss results. Following the method outlined by Brown and Dant (2009) as well as the article written by Defee *et al.* (2010), our research adopts theoretical incidents, meaning the frequency of theory application within an article, as the primary unit of analysis. For example, Gruchmann and Seuring (2018) use a dynamic capabilities perspective to explain the social

responsibility of logistics and investigate the capabilities required of logistics service providers to implement relevant strategies. We classify this as one instance of theoretical application, because the authors only refer to one theory, namely dynamic capabilities. In contrast, Badorf *et al.* (2019) draw on a resource-based and relational view of the firm to investigate how supplier economies of scale drive buyer selection decisions. We classify this as two instances of theoretical application, because the authors refer to two theories within their work, namely resource-based view and relational view.

As identifying the theory(s) used in each article was often challenging, as noted by Defee *et al.* (2010), we adopted the guideline outlined in their article. First, we also established specific criteria for coding theoretical instances and in cases where authors explicitly described the theory they were using, we coded those theories as written. More often, however, the theoretical framework remained implicit, requiring us to use inferential coding (Defee *et al.*, 2010) that relied on the authors' tacit explication of the theory, supplemented by references to well-established theoretical works, often found in the formal literature review section of the article (Defee *et al.*, 2010). Similar to Defee *et al.* (2010), we took great care to avoid assigning a theoretical label to an article without clear justification. For example, the work of Papert *et al.* (2016) analyzes supply chain visibility within a pharmaceutical supply chain to provide a solution for improving supply chain visibility based on automatic identification technologies. In this article, the authors synthesized various definitions of SCV to devise dimensions that operationalize supply chain visibility and represent a conceptual framework (Papert *et al.*, 2016). However, since no theoretical perspective was introduced and no theoretical construct was used, we categorize it as atheoretical. Second, we followed an iterative process to code, identify and categorize the theories used (Defee *et al.*, 2010), as well as the corresponding categories, topic area, and methods. After an initial meeting to establish basic coding rules, each researcher reviewed a subset of articles (Defee *et al.*, 2010). We then met to discuss our findings, examining how and where theories were introduced within the articles and, in some cases, seeking a second opinion from peers to refine our coding decisions. For the remaining articles, the team met regularly to ensure consistency in approach and to maintain coherent coding standards across researchers (Defee *et al.*, 2010).

3. RESULTS

3.1 Overview of Theoretical Incidents and Most Frequently Used Theories

The content analysis of 1,675 articles revealed the use of at least one theory in 968 articles (55.4 percent), resulting in a total of 1,539 theoretical incidents. In comparison to the original article by Defee *et al.* (2010), there is a slight increase of 2.1 percent in the use of theories. A total of 245 unique theories were identified between 2010 and 2022. Among the theories identified in the content analysis, 25 of them collectively account for over 60 percent (62.4 percent) of the total theoretical occurrences in the literature. Each of these top 25 frequently used theories, as shown in **Table 1**, individually

accounts for at least one percent of theory applications. Together, RBV, TCE, and the Contingency Theory represent approximately 21.1 percent of the theoretical applications during the investigated period from 2010 to 2022. Following these three most frequently identified theories, the frequency gradually but steadily declines.

Table 1 The 25 most frequently identified theories within our analysis (upper table) in comparison to the 25 most frequently identified theories in the article of Defee *et al.* (2010) (lower table)

Theory	% of theoretical incidents	Cumulative % of theoretical incidents
Resource Based View	10.9%	10.9%
Transaction Cost Economics	6.1%	17.0%
Contingency Theory	4.1%	21.1%
Dynamic Capabilities (Theory)	3.4%	24.5%
Social Exchange Theory	3.3%	27.8%
Institutional Theory	3.1%	30.9%
Resource Dependence Theory	2.9%	33.7%
Stakeholder Theory	2.9%	36.6%
Relational View	2.6%	39.2%
Agency Theory	2.5%	41.7%
Knowledge Based View	1.9%	43.6%
Social Capital	1.9%	45.5%
General Systems Theory	1.8%	47.3%
Information Processing Theory	1.6%	48.9%
Service-Dominant Logic	1.6%	50.4%
Risk Management	1.5%	51.9%
Game Theory	1.4%	53.3%
Social Network Theory	1.4%	54.8%
Network Theory	1.2%	56.0%
Fuzzy Set Theory	1.2%	57.2%
Resource Advantage Theory	1.2%	58.3%
Organizational Information Processing	1.1%	59.5%
Competitive Advantage	1.0%	60.4%
Diffusion of Innovation	1.0%	61.4%
Resource Orchestration Theory	1.0%	62.4%

Theory	% of theoretical incidents	Cumulative % of theoretical incidents
Transaction Cost Economics	10.4%	10.4%
Resource Based View	8.6%	19.0%
Porter's Framework	3.0%	22.0%
Contingency Theory	2.5%	24.5%
Resource Dependence Theory	2.5%	26.9%
Bullwhip Effect	2.3%	29.2%
Agency Theory	1.9%	31.2%
Social Exchange Theory	1.9%	33.1%
Game Theory	1.8%	34.9%
Core Competency	1.6%	36.4%
General Systems Theory	1.6%	38.0%
Social Network Theory	1.6%	39.6%
General Inventory Theory	1.4%	41.0%
Relationship Marketing	1.4%	42.4%
Communication Theory	1.2%	43.7%
Market Orientation	1.2%	44.9%
Organizational Learning	1.2%	46.1%
Risk Management	1.2%	47.4%
Alliance	1.1%	48.4%
Disconfirmation Theory	1.1%	49.5%
Institutional Theory	1.1%	50.5%
Organizational Theory	1.1%	51.6%
Political Economy	1.1%	52.6%
Supply Chain Risk	1.1%	53.7%
Total Cost	1.1%	54.8%

As shown in **Table 1**, the Resource Based View (RBV) is the most frequently identified theory in our sample with 10.9 percent. The RBV derives primarily from the work of Wernerfelt (1984) and Penrose (1959), although the theory was significantly shaped by Barney (1991) in the 1990s. It is conceptualized as a management theory that emphasizes that economically sustainable competitive advantage results from the identification and

development of unique, valuable, and not easily replaceable internal resources. The RBV focuses on the interaction between a firm's internal resources and prevailing market conditions to achieve long-term competitive advantage. Over the course of research, several extensions of the RBV have emerged; for example, Dynamic Capabilities (Tece *et al.*, 1997) extends the RBV by emphasizing a firm's ability to adapt and reconfigure its resources in response to changing market conditions. In addition, the Knowledge-based View (KBV) emphasizes the importance of knowledge as a critical resource (Grant, 1996), while the Resource Orchestration Theory (ROT) posits that resources must be structured, bundled, and deployed effectively to achieve competitive advantage (Sirmon *et al.*, 2011). In recent years, the Natural Resource Based View (NRBV) of Hart (1995) has also gained traction, emphasizing the importance of a firm's natural resources as a source of long-term competitive advantage and strategic differentiation. These advancements of the RBV have broadened the understanding of competitive advantage formation by highlighting dynamics, knowledge, social relationships, and external partnerships as central factors.

With 6.1 percent of all theoretical incidents, the second most frequently identified theory is Transaction Cost Economics (TCE). TCE was originally outlined by Coase (1937) and subsequently developed by Williamson (1975) (Defee *et al.*, 2010). The theory examines how firms make decisions about the organization of economic transactions based on the costs incurred. Firms use TCE to choose between internal and external governance structures, such as contracts or vertical integration, in order to increase the efficiency and profitability of their business activities. In addition, TCE influences the strategic orientation of firms by helping them to consider the costs and risks

associated with managing relationships with suppliers, partners, and other actors in the value chain.

Compared to the original article by Defee *et al.* (2010), several changes can be observed within the top 25 theories. In the period under review (2010 to 2022), RBV has taken the lead, displacing TCE, which previously held the top position. Specifically, TCE experienced a decline of almost 5 percent, while RBV gained about 3 percent. It is worth noting the theories that have been added or removed from the top 25 theories. For example, Dynamic Capabilities (3.4 percent), Stakeholder Theory (2.9 percent), KBV (1.9 percent), Information Processing Theory (1.6 percent), and Service-Dominant Logic (1.6 percent) are among the newcomers from this list. However, Porter's Framework, Bullwhip Effect, Core Competency, General Inventory, and Communication Theory are absent in the latest version of the top 25 most identified theories used.

Following Defee *et al.* (2010), the theories were classified into the same 13 categories as in the original article. Throughout the process of classifying the sample articles, the theoretical categories were under constant review (Defee *et al.*, 2010). Initially, several broad theoretical categories were selected on an ad hoc basis based on the theories to facilitate an initial coding process (Defee *et al.*, 2010). Prior to beginning article coding, the categories were cross-checked with those used by Defee *et al.* (2010), using informal communication and regular group meetings to discuss, adjust, and add to our category list (Defee *et al.*, 2010). Subsequently, ambiguous assignments were adjusted and those that did not fit into one of the categories were moved to the "other" category. **Table 2** provides a comprehensive list of theories within each category. Further, appendix 1 shows individual papers for each of the 25 most frequently identified theories.

Table 2 Categorization of theories identified

Competitive	Other social psychological/sociological	Theories of organizations	Psychological theories for individuals	Systems	Microeconomic
Resource Based View	Theory of Planned Behavior	Stakeholder Theory	Attribution Theory	General Systems Theory	Transaction Cost Economics
Contingency Theory	Resilience Theory / SC-Resilience	Organizational Information Processing Theory	Equity Theory	Risk Management	Resource Dependence Theory
Dynamic Capabilities (Theory)	Theory of Reasoned Action	Organizational Theory	Self-Determination Theory	Network Theory	Agency Theory
Relational View	Expectation Disconfirmation Model / Theory	Behavioural Theory of the Firm	Social Cognitive Theory	Supply Chain Risk	Game Theory
Knowledge Based View	Goal Setting Theory	Inter-Organizational / Organizational Learning	Role Theory	Bullwhip Effect	Fuzzy Set Theory
Resource Advantage Theory	Behavioral Decision Theory	Organizational Support Theory	Commitment Theory	Normal Accident Theory	Utility Theory
Competitive Advantage	Practice Theory	Social Identity	Motivation Hygiene Theory	Complex Adaptive Systems Theory	Relational Exchange Theory
Resource Orchestration Theory	Social Dilemma Theory	Integration Theory	Protection Motivation Theory	Grey System Theory	Modern Portfolio Theory / Portfolio Theory
Signaling Theory	Actor Network Theory	Internalization Theory	Rational Choice Theory	Socio-Technical Systems Theory	Upper Echelon Theory
Balanced Theory of Port Competitiveness	Attachment Theory	Technology Organization Environment Framework	Social Judgment Theory	System Design Theory	Principal Agent Theory
Natural Resource Based View	Choice Theory	Configuration Theory	Strain Theory	Theory of Constraints	Process Theory
Factor/Market Rivalry Theory	Cognitive Evaluation Theory	Enactment Theory	Theory of Buyer Behavior	Industrial Network Theory	Stewardship Theory
Supply Chain Theory	Communication Theory	Competing Values Theory	Theory of Perceived Risk	Information Systems Success Theory	Efficient Market Theory
Sustainable Supply Chain Management	Congruency Theory	Lewins Three Phase Force Field Theory	Theory of Psychological Reactance	Life-Cycle Hypothesis	Job Demands Resources Model
Strategy Structure Performance	Conservation of Resources Theory	Attention Based View	Career Stage Theory	Multiple Attribute Utility Theory	Joint Economic Lot Size Models
Structure Conduct Performance	Debiasing Theory	Event Systems Theory	Cognitive-Affective-Conative Theory	Multi-tier Supply Chain Management Theory	Lemon Market Theory
Supply Chain Orientation	Expectation Confirmation Theory	High Reliability Theory	Complementarity Theory	Input-Output Theory	
Cluster Theory	Media Richness Theory	Imprinting Theory	Coping Theory	Supply Chain Integration Design Theory	
Modularity Theory	Procedural Justice Theory	Intraorganizational Influence Theory	Disengagement Theory	Supply Network Theory	
Neoclassical Economic Theory	Relational Theory	Legitimacy Theory	Expectancy Violation Theory	Black Swan Effect	
Performance-based Logistics	Social and Life Science Theory	Organizational Change Theory	Goal Congruity Theory		
Practice Based View	Social Contract Theory	Organizational Culture Theory	Implicit Leadership Theory		
Alignment Theory	Social Penetration Theory	Personality-Job Fit Theory	Mental Accounting Theory		
Core Competency	Socio Political Theory	Cognitive Category Theory	Preference Theory		
Deterrence Theory	Theory of Communicative Action	Cognitive Theory of the Firm	Psychological Contract Theory		
Information-based Logistics Orientation	Uses and Gratification Theory	Coordination Theory	Risk Compensation Theory		
Market Based View	Justice Theory	Efficiency Wage Theory	Risk Interdependence Theory		
Platform Theory	Chaos Theory	Human Relations Theory	Task-Technology Fit Theory		
Process Orientation	Panarchy Theory	Interorganizational Relationship Theory	Task-Technology Fit Theory		
Resource Allocation Theory	Path-Goal Theory	Person-Organization Fit Theory	Theory of Interpersonal Behavior		
Service Quality Theory	Constructivist Learning Theory	Resource Exchange Theory	Theory of Work Adjustment		
Service Theory	Game Displacement Theory	Role Stress Theory	Information Processing Theory		
Theory of Cooperation and Competition	Criminological Routine Activity Theory	Stakeholder Resource Based View	Information Sharing Theory		
X-Efficiency Theory	Fairness Theory	Strategic Orientation			
	Feminist Theory	Theory of Knowledge Management			
	Genealogical Theory	Theory of Organizational Design			
	Human Capital Theory	Complexity Theory			
	Latent Trait Theory	Design Theory			
	Unified Theory of Acceptance and Use of Technology	Control Theory			
	Innovation Theory	Cultural Theory			
	Ecological Modernization Theory	Customer Appraisal Theory			
	Theory of Disruptive Innovations	Coalition Theory			
	Theory of Logistics Innovation	Contract-Coordination Theory			
	Innovation Adoption	Media Multiplicity Theory			
		Power Theory			
		Problem Solving Theory			
		Unified Service Theory			

The categorization of each article with at least one identified theoretical occurrence is presented in the

supplementary file "Supplementary_material_dataset". As summarized in **Table 3**, the two major categories of

competitive theories (31.3 percent) and microeconomic theories (16 percent) together account for nearly 50 percent of all theoretical incidents. Theories of Organizations (12 percent), system-related theories (8 percent), and social exchange theories (6.8 percent) were the most common. For example, the 31.3 percent in **Table 3** means that 31.3 percent of the total number of theoretical incidents identified are from theories that fall into the competitive category.

Table 3 Frequency of theoretical incidents within our analysis (upper table) in comparison to the frequency of theoretical incidents in the article of Defee *et al.* (2010) (lower table)

Theory Category	Percentage
Competitive	31.3%
Microeconomic	16.0%
Theories of Organizations	12.0%
Systems	8.0%
Social exchange	6.8%
Psychological theories for individuals	5.5%
Other social psychological/sociological	5.0%
Institutional	4.0%
Marketing	3.5%
Decision	2.6%
Other	2.6%
Innovation	2.3%
Inventory	0.5%

Theory Category	Percentage
Competitive	22.7%
Microeconomic	18.8%
Systems	11.3%
Marketing	9.5%
Theories of Organizations	7.4%
Other social psychological/sociological	5.1%
Social exchange	4.6%
Inventory	4.4%
Institutional	3.0%
Decision	3.5%
Innovation	2.1%
Psychological theories for individuals	1.6%
Other	6.0%

In comparison to the 2010 article, there has been an 8.6 percent increase in the use of theories within the competitive category, now at 31.3 percent. On the other hand, the “Microeconomic” category has decreased by 2.8 percent to 16 percent. Here and in the following sections, negative deviations from the results of Defee *et al.* (2010) are indicated in red, while positive deviations are highlighted in green. In cases where the value is the same, it is not marked with any color. There has also been a shift in the rankings, with “Organizational Theories” (12 percent) now overtaking “Systems” to become the third most common category over the 2010 to 2022 period. It is worth noting that the category “Marketing”, which ranked fourth in the article by Defee *et al.* (2010) with 9.5 percent, has dropped to 9th place in the current study with only 3.5 percent. Consequently, marketing theories are used less frequently in LSCM research in the current period compared to the period from 2004 to 2009.

Many theoretical categories were consistently identified across the five journals, as shown in **Table 4**.

Within these journals, competitive theory is now the most prevalent. Between 2004 and 2009, the “Competitive” category led in four of the five journals, with the exception of JSCM (Defee *et al.*, 2010). This highlights the continuing versatility of strategic management theories in understanding logistics and supply chain phenomena (Defee *et al.*, 2010). Strategic management or competitive theory focuses attention on individual firms and their pursuit of competitive advantage (Barney, 1991; Hamel and Prahalad, 1993; Defee *et al.*, 2010). Christopher (1992) was one of the first to note the shift from firm-to-firm competition to the supply chain level. The analysis shows that LSCM researchers have often adapted and extended strategic management theories to address multi-firm issues (Defee *et al.*, 2010). While competitive theories remain the most common in all journals analyzed, their relative frequency has not increased across all journals. Competitive theories continue to dominate in JBL and JSCM, albeit with a slight decrease in relative frequency (JBL -0.6 percent; JSCM -6.3 percent).

Table 4 Frequency of theoretical incidents by journal

Theory Category	IJLM	IJPDLM	JBL	JSCM	TJ
Competitive	32.6%	27.1%	26.4%	23.4%	23.9%
Microeconomic	15.6%	17.4%	12.7%	17.9%	17.0%
Theories of Organizations	13.2%	11.4%	14.2%	11.9%	10.2%
Systems	9.4%	8.3%	7.1%	5.0%	8.0%
Social exchange	5.5%	5.4%	7.6%	12.4%	8.0%
Psychological theories for individuals	4.5%	4.6%	8.1%	12.8%	3.4%
Other social psychological/sociological	4.7%	6.0%	8.1%	4.1%	6.8%
Institutional	4.7%	4.0%	3.6%	6.4%	4.5%
Marketing	3.4%	5.7%	4.6%	1.4%	4.5%
Decision	2.1%	4.3%	1.5%	2.3%	4.5%
Other	1.1%	2.0%	3.0%	1.8%	4.5%
Innovation	3.0%	2.6%	2.5%	0.5%	3.4%
Inventory	0.2%	1.1%	0.5%	0.0%	1.1%

Microeconomic theories are the second most common category across all five journals, except JBL. Essentially, microeconomic theories examine market or industry trends and attempt to rationalize the decision-making processes of individuals and firms regarding the allocation of scarce resources (Dimand, 2008; Defee *et al.*, 2010). Economic theories represent well-established concepts and have significantly influenced fundamental aspects such as the understanding of the existence of firms (Coase, 1937), management practices (Drucker, 1954), international market entry (Anderson and Gatignon, 1986; Madhoc, 1997), outsourcing (Maltz, 1994; Williamson, 2008), and marketing channels (Rindfleisch and Heide, 1997). Despite its broader scope compared to competitive theory, microeconomic theory also focuses on the firm level, which facilitates its applicability in LSCM research (Defee *et al.*, 2010).

Organizational theories (except JSCM) and systems theories (except JBL and JSCM) were the third and fourth largest categories. These categories are important in LSCM research because they provide insights into the nature, functioning and structure of organizations involved in complex supply chains (e.g., Halldórsson *et al.*, 2015; Tewari and Wilding, 2022). They help to understand the relationships among the various stakeholders within the supply chain and to analyze how organizations cooperate and structure themselves in this environment. These theories facilitate a better examination and understanding of the efficiency, effectiveness, and behavioral patterns of organizations in the supply chain context.

The only category that has seen an increase in applications across all five journals is the “Social Exchange” category. Theories in this category focus on the dynamics and quality of social interactions in supply chains, elucidating how trust, mutual benefits, and network structures influence relationships and cooperation among actors in the supply chain. These theories are critical to understanding how social factors can enhance efficiency, innovation, and competitiveness in modern supply chains. As a result, it can be hypothesized that social factors in LSCM research have become more relevant during the period analyzed. Conversely, the use of marketing theories has declined in all five journals, which may indicate a decreased relevance of the respective theories within this category.

In addition to the changes in journal categories over the comparison period, our data allows us to present the most frequently identified theories per journal (see **Table 5**). For example, the 5.6 percent (in TJ) in **Table 5** means that 5.6 percent of the total number of theoretical incidents identified in articles from TJ use KBV. It is evident that across all five journals, either RBV directly or its derivatives (e.g., Resource Dependence Theory, KBV) were the most frequently used. This cumulative evidence suggests that these theoretical foundations can be considered dominant and integrative within the respective scholarly literature. Furthermore, examining the proportion of articles labeled as “atheoretical” provides insight into the general use of theories within each journal. The JSCM and the IJLM have the lowest percentages of articles labeled “atheoretical” at 16.0 percent and 18.7 percent, respectively. In contrast, the JBL, with 26.7 percent, the IJPDLM, with 27.3 percent, and finally the TJ, with 41.8 percent, show a larger number of articles without clear theoretical connections. Consequently, the findings demonstrate that JSCM and IJLM strongly consider the application of theories on phenomena in the field of LSCM research. This, in turn, could imply that the JSCM and IJLM play an active role in exploring and integrating theoretical concepts in LSCM-specific scenarios, potentially catalyzing significant impulses for further theoretical advances. On the other hand, this also shows that TJ in particular is of great interest to practitioners because of the importance attached to practice-oriented research.

Table 6 illustrates the utilization of theories across categories within LSCM-oriented research. Of the selected articles, 710 (42.4 percent) were logistics-oriented, while 965 (57.6 percent) were SCM-oriented. The relative proportion of atheoretical articles in logistics is 49.9 percent (354 articles) compared to 36.6 percent (353 articles) in SCM, indicating a greater prevalence of theories in SCM-oriented articles. Similar to **Tables 3** and **Table 4**, the dominance of competitive theories is evident in both logistics (37.2 percent) and SCM (46.3 percent), showing an amplification compared to the findings of Defee *et al.* (2010) (logistics +16.2 percent; SCM +22.8 percent). In logistics, microeconomic theories ranked second with 11.6 percent, a slight decrease of 0.3 percent. The category with the second highest number of identified theories in SCM is systems-oriented theories with 13.0 percent. Particularly in SCM, as value systems become more complex and globally interconnected, a growing number of studies have been

published on topics such as business ecosystems (e.g., Wagner, 2021), circular economy (e.g., Gatenholm *et al.*, 2021), or supply networks (e.g., Tatham and Pettit, 2010), favoring the use of theories such as supply network theory, socio-technical systems theory, or industrial network theory. An overview of the yearly distribution of most frequently identified theories from 2010 to 2022 can be found in appendix 2.

Table 5 Top 15 theories identified per journal

Theory	IJLM	Theory	IJPDLM
Resource Based View	19.6%	Resource Based View	14.7%
Dynamic Capabilities	4.8%	Real Options Theory	4.7%
Contingency Theory	4.5%	Resource Dependence Theory	3.8%
Resource Dependence Theory	3.6%	Transaction Cost Economics	2.7%
Knowledge Based View	2.8%	Knowledge Based View	2.5%
Game Theory	2.7%	Contingency Theory	2.4%
Social Exchange Theory	2.4%	Service-Dominant Logic	2.4%
Transaction Cost Economics	2.3%	Risk Management	1.9%
Fuzzy Set Theory	2.0%	Social Exchange Theory	1.9%
General Systems Theory	2.0%	Signaling Theory	1.8%
Stakeholder Theory	1.9%	Institutional Theory	1.4%
Institutional Theory	1.6%	Social Capital	1.4%
Relational View	1.4%	Agency Theory	1.2%
Theory of Planned Behavior	1.3%	Design Theory	1.2%
Information Processing Theory	1.2%	Organizational Information Processing Theory	1.2%

Theory	JSCM	Theory	TJ
Resource Dependence Theory	10.6%	Knowledge Based View	5.6%
Resource Based View	9.6%	Resource Based View	3.5%
Transaction Cost Economics	4.4%	Fuzzy Set Theory	3.2%
Attribution Theory	3.4%	Competitive Advantage	2.1%
Social Network Theory	3.4%	Social Capital	2.1%
Social Exchange Theory	3.1%	Social Exchange Theory	1.8%
Institutional Theory	2.8%	Transaction Cost Economics	1.8%
Information Processing Theory	2.6%	Balanced Theory of Port Competitiveness	1.4%
Social Capital	2.3%	Attention Based View	1.1%
Contingency Theory	2.1%	Choice Theory	1.1%
Stakeholder Theory	2.1%	Control Theory	1.1%
Agency Theory	1.8%	Institutional Theory	1.1%
Dynamic Capabilities	1.8%	Network Theory	1.1%
Practice Based View	1.6%	Prospect Theory	1.1%
General Systems Theory	1.3%	Resource Dependence Theory	1.1%

Theory	JBL
Resource Based View	12.7%
Social Exchange Theory	4.4%
Agency Theory	3.7%
Contingency Theory	2.7%
Resource Dependence Theory	2.7%
Transaction Cost Economics	2.7%
General Systems Theory	2.0%
Information Processing Theory	1.5%
Stakeholder Theory	1.5%
Expectation Disconfirmation Model	1.2%
Relational View	1.2%
Design Theory	1.0%
Institutional Theory	1.0%
Resource Advantage Theory	1.0%
Resource Orchestration Theory	1.0%

In line with Defee *et al.* (2010), it was of particular interest to explore the evolution and direction of the articles' focus on logistics or SCM phenomena from 2010 to 2022, which led to the coding of each article accordingly. To ensure comparability with Defee *et al.* (2010), the definitions of logistics by Mentzer *et al.* (2004) and SCM by Gibson *et al.* (2005) were adopted. Mentzer *et al.* (2004) define logistics as the movement and storage activities associated with an organization's flow of products and services. In contrast, Gibson *et al.* (2005) define SCM more broadly to include a variety of processes (e.g., procurement, logistics, manufacturing, marketing, retailing) involving multiple stakeholders (typically separate entities, occasionally discrete functions or divisions within a highly integrated firm).

Table 6 Theoretical categories by LSCM focus within our analysis (upper table) in comparison to theoretical categories in the article of Defee *et al.* (2010) (lower table)

Theory Category	Logistics	SCM
Competitive	33.6%	34.8%
Microeconomic	11.9%	9.8%
Theories of Organizations	10.5%	12.8%
Systems	5.6%	9.8%
Social exchange	7.7%	4.9%
Psychological theories for individuals	2.8%	11.0%
Other social psychological/sociological	9.1%	4.9%
Institutional	4.9%	6.7%
Marketing	6.3%	5.5%
Decision	4.2%	0.0%
Other	0.0%	0.0%
Innovation	2.8%	0.0%
Inventory	0.7%	0.0%

Theory Category	Logistics	SCM
Competitive	21.0%	23.5%
Microeconomic	11.9%	21.9%
Systems	12.5%	10.7%
Marketing	11.4%	8.7%
Theories of Organizations	8.0%	7.1%
Other social psychological/sociological	2.8%	6.1%
Social exchange	2.3%	5.6%
Inventory	10.8%	1.5%
Institutional	6.3%	1.5%
Decision	4.5%	3.1%
Innovation	2.8%	1.8%
Psychological theories for individuals	1.1%	1.8%
Other	4.5%	6.6%

3.2 Use of Theory Categories in Major Topic Areas

In addition to capturing the theories used in the selected articles, we also identified the primary topic of each article, following the approach of Defee *et al.* (2010). Through this process, 28 topics were assigned, following a methodology similar to the earlier category creation process. Thirteen of these topics were adopted deductively from Defee *et al.* (2010) for the desired comparability, while another fifteen were formed inductively from the present dataset. The goal here is not to explain or summarize each research topic specifically, but rather to elucidate how different theory categories are applied within these substantive research areas (Defee *et al.*, 2010). Therefore, this section, in line with **Table 7**, examines the application of theory categories across different substantive topic areas within LSCM.

Table 7 highlights the dominant categories of theories within each subject area. It is evident that no single theory category comprehensively covers all topics. However, “microeconomic” and “organizational” theories are most prevalent in 27 out of 28 topics, while “competitive” theories comes in second place with 26 out of 28 topics each. These findings are consistent with Defee *et al.* (2010), as “inventory” and “innovation” theories are also associated with the fewest topics between 2010 and 2022, 5 and 13 out of 28, respectively.

Table 7 Topic analysis within theory categories

Topics	Competitive	Micro-economic	Theories of Organizations	Systems	Social Exchange	Psychological Theories for Individuals	Other social psychological/sociological	Institutional	Marketing	Decision	Other	Innovation	Inventory
3PL	1.6%	4.2%	1.2%	1.0%	4.3%	0.0%	1.4%	1.7%	1.9%	5.4%	0.0%	3.1%	0.0%
Capabilities	9.1%	0.9%	0.6%	0.0%	0.0%	1.3%	0.0%	1.7%	3.8%	0.0%	0.0%	0.0%	0.0%
Circular Economy	1.1%	1.9%	0.6%	1.9%	3.2%	1.3%	2.7%	0.0%	0.0%	2.7%	0.0%	0.0%	0.0%
Collaboration	4.3%	6.1%	3.0%	2.9%	9.6%	1.3%	4.1%	5.0%	3.8%	0.0%	0.0%	3.1%	0.0%
Customer Service	1.3%	2.3%	1.8%	1.0%	2.1%	7.7%	5.5%	0.0%	17.3%	2.7%	6.3%	3.1%	0.0%
Ecosystem	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	3.8%	0.0%	0.0%	0.0%	0.0%
Finance	0.5%	2.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.1%	0.0%
Flexibility	3.0%	0.9%	0.6%	1.0%	0.0%	1.3%	1.4%	0.0%	1.9%	0.0%	0.0%	0.0%	0.0%
Human Resources	1.3%	2.3%	2.4%	1.9%	5.3%	5.1%	1.4%	1.7%	1.9%	2.7%	0.0%	0.0%	0.0%
Information/Technology	9.7%	8.5%	7.9%	7.6%	2.1%	7.7%	4.1%	3.3%	1.9%	2.7%	12.5%	43.8%	0.0%
Integration	4.6%	3.8%	3.0%	4.8%	4.3%	7.7%	1.4%	5.0%	0.0%	0.0%	3.1%	0.0%	0.0%
Inventory	0.5%	1.4%	1.8%	3.8%	0.0%	0.0%	2.7%	0.0%	0.0%	0.0%	3.1%	3.1%	14.3%
Logistics and Distribution	12.9%	8.9%	7.9%	9.5%	11.7%	6.4%	9.6%	10.0%	15.4%	21.6%	3.1%	12.5%	14.3%
Other	1.6%	3.8%	4.8%	1.0%	2.1%	3.8%	6.8%	1.7%	3.8%	2.7%	18.8%	0.0%	14.3%
Procurement	2.2%	0.9%	0.6%	0.0%	1.1%	0.0%	0.0%	1.7%	0.0%	2.7%	3.1%	0.0%	0.0%
Product Development	0.5%	1.4%	0.6%	0.0%	2.1%	2.6%	0.0%	0.0%	0.0%	2.7%	3.1%	0.0%	0.0%
Production	0.0%	0.9%	0.6%	0.0%	0.0%	0.0%	0.0%	1.7%	1.9%	2.7%	0.0%	0.0%	0.0%
Relationships	5.4%	8.9%	4.8%	1.9%	14.9%	12.8%	5.5%	3.3%	13.5%	10.8%	0.0%	0.0%	0.0%
Research and Methods	1.6%	2.8%	4.8%	2.9%	4.3%	2.6%	5.5%	3.3%	3.8%	2.7%	3.1%	3.1%	0.0%
Resilience	4.3%	1.4%	4.8%	8.6%	5.3%	2.6%	11.0%	1.7%	1.9%	2.7%	3.1%	3.1%	0.0%
Risk	2.7%	5.6%	6.7%	26.7%	4.3%	11.5%	2.7%	5.0%	0.0%	8.1%	0.0%	0.0%	0.0%
SCM	9.4%	8.5%	8.5%	12.4%	5.3%	5.1%	9.6%	11.7%	7.7%	10.8%	12.5%	3.1%	28.6%
Social Responsibility	0.3%	0.5%	1.2%	0.0%	1.1%	0.0%	1.4%	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Strategy	7.3%	5.6%	5.5%	2.9%	6.4%	2.6%	6.8%	3.3%	3.8%	0.0%	3.1%	3.1%	28.6%
Sustainability	11.0%	11.3%	19.4%	4.8%	6.4%	5.1%	9.6%	25.0%	1.9%	8.1%	9.4%	9.4%	0.0%
Transport	1.9%	3.3%	4.2%	3.8%	4.3%	10.3%	5.5%	8.3%	3.8%	8.1%	12.5%	6.3%	0.0%
Value Co-Creation	0.5%	0.9%	0.6%	0.0%	0.0%	1.3%	1.4%	0.0%	5.8%	0.0%	3.1%	0.0%	0.0%
Value Creation	1.3%	0.5%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

3.3 Research Methods Used with Theory Categories

The methodological approaches of each article were identified following the framework outlined by Defee *et al.* (2010) and categorized into ten classifications. This categorization process was similar to the method used to classify theories and themes, with articles that did not fit into these ten groups assigned to the “other” category. **Table 8** summarizes the research methods used within each theoretical category.

Surveys have historically been a popular method in LSCM research (Gammelgaard, 2004; Mentzer and Kahn, 1995; Defee *et al.*, 2010). The table clearly shows that from

2010 to 2022, surveys remained a dominant choice among researchers, being used in 12 out of 13 theoretical categories, with the highest frequency observed in the “competitive” category (38.2 percent). The same observation can be made for the case study and mixed methods methodologies, which are also most frequently utilized within the aforementioned “competitive” category, accounting for 24 percent and 27.7 percent of their respective usage. Two of the identified methods, namely analytical model and literature review, were used in all 13 theoretical categories. For example, 21.4 percent of the analytical models are in the area of competition theories.

Table 8 Method use within theory categories

Theory Category	Analytical Model	Archival	Case Study	Conceptual	Experimental Design	Literature Review	Mixed Methods	Qualitative	Simulation	Survey	Other
Competitive	21.4%	36.4%	24.0%	29.0%	17.8%	22.7%	27.7%	27.3%	25.0%	38.2%	28.6%
Microeconomic	15.7%	18.2%	20.5%	18.3%	13.3%	17.3%	19.2%	20.5%	6.3%	12.8%	16.9%
Theories of Organizations	12.9%	9.1%	12.3%	10.8%	6.7%	14.5%	10.8%	9.8%	0.0%	12.5%	7.8%
Systems	11.4%	4.5%	12.3%	9.7%	6.7%	9.5%	13.1%	12.9%	37.5%	2.0%	9.1%
Social exchange	5.7%	4.5%	5.5%	7.5%	6.7%	6.4%	6.9%	6.8%	0.0%	11.1%	6.5%
Psychological theories for individuals	4.3%	4.5%	4.1%	0.0%	33.3%	4.1%	3.8%	6.1%	6.3%	4.4%	13.0%
Other social psychological/sociological	8.6%	0.0%	4.8%	8.6%	8.9%	7.3%	6.2%	6.1%	0.0%	3.8%	6.5%
Institutional	2.9%	13.6%	5.5%	5.4%	0.0%	3.6%	3.8%	3.8%	0.0%	4.4%	3.9%
Marketing	4.3%	0.0%	2.7%	6.5%	0.0%	4.1%	3.1%	3.0%	0.0%	5.5%	1.3%
Decision	1.4%	4.5%	4.1%	2.2%	4.4%	2.7%	2.3%	2.3%	25.0%	1.2%	2.6%
Other	4.3%	0.0%	0.7%	1.1%	0.0%	2.7%	1.5%	0.0%	0.0%	1.5%	2.6%
Innovation	4.3%	0.0%	3.4%	0.0%	2.2%	4.1%	1.5%	1.5%	0.0%	2.6%	1.3%
Inventory	2.9%	4.5%	0.0%	1.1%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%

4. DISCUSSION

A key research question of this study is to analyze the extent of theory application in LSCM research from 2010 to 2022. This objective was pursued through a rigorous examination of a total of 1,675 scientific publications from five prominent journals in the field of LSCM. Our findings indicate that 55.4 percent of the selected articles explicitly imply the use of at least one existing theory, which represents a slight increase (+2.1 percent) in theory application compared to the original study by Defee *et al.* (2010). Another objective of this research was to identify the dominant theories in LSCM research and to evaluate their distribution over the years. Through our analysis, we identified 245 unique theories, with a small number of these theories accounting for the majority of theoretical applications, as shown in **Table 1**. Similar to Defee *et al.* (2010), the RBV from strategic management and the TCE from microeconomics were the most frequently identified theories. Together, these two theories accounted for 17 percent, or nearly one-fifth of all theoretical occurrences.

However, social and economic developments (e.g., Papert *et al.*, 2024; Sodhi and Tang, 2021) are also reflected in the use of theories (**Table 1**) and topics (**Table 7**). We discovered that Dynamic Capabilities, Stakeholder Theory, KBV, Information Processing Theory, and Service-Dominant Logic are among the top 25 most commonly utilized theories. In the face of change and disruptions (e.g., Richey *et al.*, 2022), flexibility, resilience, adaptability, and dynamism have become crucial for today's organizations.

Dynamic Capabilities (Teece *et al.*, 1997) help firms adapt to these changes, reconfigure resources, and foster innovation to navigate evolving environments. In addition, companies face increasing pressure to be sustainable, socially responsible and to address the needs of multiple stakeholders in the ecosystem (e.g., Garde Sánchez *et al.*, 2017; Pagell and Shevchenko, 2014; Piecyk and Björklund, 2015; Wieland, 2021). Stakeholder theory (Freeman, 1984) helps align decisions and activities with a broader stakeholder base, promoting long-term legitimacy and sustainability. Furthermore, in a knowledge-based economy, access to, creation of, and use of knowledge are critical. The KBV (Grant, 1996) underscores the importance of knowledge management, innovation, and learning for organizations to gain competitive advantage and thrive in a volatile and complex environment (Christopher and Holweg, 2017). In addition, effective information processing is essential for organizations in the age of digital transformation (Hofmann *et al.*, 2019; Shi *et*

al., 2023) and information overload. Information Processing Theory (Rogers *et al.*, 1999) helps to understand how organizations can acquire, process, and use information to make informed decisions and improve performance. In an era where services and customer interactions are increasingly important (e.g., Fischer and Papert, 2024; Opresnik and Taisch, 2015; Wieland, 2021), the focus is shifting from pure commodity logic to a paradigm that emphasizes the value of services and customer relationships. Service-Dominant Logic (Vargo and Lusch, 2004) enables organizations to focus on delivering services and building lasting customer relationships to create value and strengthen their competitive position.

For example, in the context of SCM, the role of the Internet of Things (IoT) has been widely recognized as a critical component of Industry 4.0 (Zhang *et al.*, 2023; Rebelo *et al.*, 2022). De Vass, Shee, and Miah (2021) highlight the transformative impact of IoT, which is consistent with the theoretical frameworks discussed in this review, such as DCs. Their findings provide valuable practical examples of how IoT supports the application of these theories in SCM research. Furthermore, their work highlights the need to adapt established theories, such as RBV, to account for the rapid pace of technological innovation. This highlights the growing need to re-examine the adequacy of existing SCM theories. Furthermore, Liao and Widowati (2021) provide a comprehensive review of SCM theoretical models from 2014 to 2019, reinforcing the relevance of core models such as the RBV and TCE. Their analysis not only supports the findings presented in this study, but also highlights the importance of refining and testing these models in contemporary SCM environments. Such evaluations provide a foundation for future research and encourage the development of new theoretical frameworks that can address the evolving challenges of modern SCs. Sordan *et al.* (2022) extend this discussion by conducting a bibliometric analysis of Industry 4.0 in operations management, demonstrating how technologies are reshaping SCM theories. Their work supports the argument that emerging technologies require a reassessment of traditional theoretical approaches, adding further depth to the ongoing debate on theory development. It also points to a clear opportunity for future research to adapt existing models to better address the complexities introduced by digital transformation in SCs. Similarly, Ben-Daya *et al.* (2022) apply RBV in the context of the impact of IoT on SCM, demonstrating how IoT can enhance SC competitiveness. Their conceptual framework strengthens the broader theoretical discourse by questioning whether

established models (e.g. RBV) are sufficient to address the challenges of modern SCM. Their work suggests that further exploration of the relationship between technology and theory is needed, especially in light of the transformative potential of IoT.

These studies not only reinforce the practical implications of the theoretical findings, but also highlight key areas where further research is needed. The ongoing digital transformation in SCM, particularly through IoT technologies, raises important questions about the adequacy of existing theories. These findings call for a re-examination of current models and encourage scholars to explore how theoretical frameworks need to evolve to address the increasing complexity of modern SCs, thus stimulating critical discussion and future research in this area.

5. CONCLUSION

Within the scope of theories, their range can be deliberated (Stank *et al.*, 2017; Swanson *et al.*, 2020), distinguishing between a “general theory” approach and a “middle-range theory” approach (Swanson *et al.*, 2020). General theories drive research questions that focus on phenomena that are operationalized at a high level of abstraction with minimal functional context associated with the particular phenomenon (Schmenner *et al.*, 2009; Stank *et al.*, 2017). Consequently, a general theory approach to research limits the depth of insights into the intricate interrelationships between phenomena in the logistics domain (Stank *et al.*, 2017). That is, the study of general theories has enabled scholars to identify fundamental concepts in logistics. However, specific phenomena such as internal processes and connections that influence particular outcomes have remained opaque areas (Astbury and Leeuw, 2010; Stank *et al.*, 2017). Focusing on detailed research can help gain a complete understanding of the influence of logistical phenomena on outcomes and explore the conditions and mechanisms underlying their formation (Weick, 1974; Stank *et al.*, 2017).

Middle-range theories, on the other hand, are constructed through years of empirical research on specific issues within a field, allowing scholars in a developing discipline to apply and synthesize the rich accumulation of empirical findings to current context-specific problems (Stank *et al.*, 2017; Swanson *et al.*, 2020; Craighead *et al.*, 2016). They integrate a level of specificity that limits their explanations of causal relationships to a subset of phenomena within a given domain (Merton 1968). They aim to predict phenomena by focusing on the specific generative causes or mechanisms that produce outcomes within a particular context (Pawson and Tilley 1997; Stank *et al.*, 2017). However, middle-range theories are not simply “contextualized” general theories (Stank *et al.*, 2017). Whereas general theories propose variables and propositions that are not bound to a specific domain, middle-range theories are deeply embedded in their developmental context (Stank *et al.*, 2017; Craighead *et al.*, 2016).

Regarding our findings of the most frequently identified theories (**Table 1**) and the characterization of general and middle-range theory, we observe that the top 5 theories (27.8% of theoretical incidents) in LSCM research,

namely RBV, TCE, Contingency Theory, Dynamic Capabilities, and Social Exchange Theory, belong to the category of general theory. Our findings reinforce a discernible trend in LSCM research, echoing observations previously noted in Defee’s (2010) study. The prevalence of these theories, characterized by their high-level abstraction and low contextual specificity (Schmenner *et al.*, 2009; Stank *et al.*, 2017), might point out a research field inclined towards broad, foundational concepts. While this approach helps to identify general principles for describing real-world phenomena, using fewer middle-range theories in LSCM research may not be sufficient to explain nuanced, context-specific or complex intricacies. For instance, the intricate process of digitalization, encompassing the integration of digital platforms into SCM (Papert *et al.*, 2024; Goertler *et al.*, 2024), necessitates alternative or more specific theoretical perspectives to elucidate this phenomenon (Anderson *et al.*, 2022; Stank *et al.*, 2019). To cultivate a deeper, more nuanced understanding of context-specific or complex phenomena in LSCM, actively pursuing a more balanced integration of both general and middle-range theories could prove beneficial.

The analysis of theories in LSCM research is highly beneficial for practitioners, as it helps to translate complex real-world situations into understandable models, thereby improving process efficiency (Sweeney *et al.*, 2015; Swanson *et al.*, 2017). A deeper understanding of these theories allows for more coherent strategy implementation and effective identification of key success factors and potential barriers. This understanding fosters a common language between theory and practice and improves supply chain strategy execution (Sweeney *et al.*, 2015). Practitioners can use a solid theoretical foundation to facilitate smoother implementation and communication of strategies, potentially reducing misunderstandings and promoting consistency across teams and departments. Theories provide a framework for assessing the effectiveness of implementation strategies and their alignment with theoretical expectations in specific contexts (Sweeney *et al.*, 2015).

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APPENDIX 1: EXAMPLES OF PAPERS FOR EACH OF THE 25 MOST FREQUENTLY IDENTIFIED THEORIES

Identified theory within the article	Article	Title/Focus	Theory usage / purpose	Findings
Resource Based View	Laksmana et al. (2020)	Common resources-resource bundling-performance: the mediating role of resource bundling in container terminal operations	<i>Building on the resource-based view (RBV) perspective of common resources, the objective of this paper is to empirically examine the impact of container terminals' common resources (i.e. government support and terminal resources) on resource bundling strategies and subsequent effect on service performance.</i>	<i>Government support and terminal resources (personnel and physical), both as sources of common resources when bundled effectively, are found to have positive and significant effect on terminal service performance. The resource bundling strategies fully mediate the relationship between container terminals' common resources and service performance.</i>
Transaction Cost Economics	De Goeij et al. (2021)	Understanding SME suppliers' response to supply chain finance: a transaction cost economics perspective	<i>Reverse factoring (RF) is one of the most prevalent supply chain finance (SCF) solutions. This study challenges the view that suppliers accept financially attractive reverse factoring offers (RFOs) and reject financially unattractive ones. Specifically, it focuses on small and medium enterprise (SME) suppliers and how transaction cost economics (TCE) factors affect their decision.</i>	<i>In five out of eight RFOs, suppliers either accepted unattractive offers or rejected attractive ones. Bounded rationality and opportunism seem to explain such misalignment, while asset specificity and frequency play a minor role in decisions.</i>
Contingency Theory	Rose et al. (2017)	Urban Logistics: Establishing Key Concepts and Building a Conceptual Framework for Future Research	<i>Through a systematic literature review, this research combines concepts and theories from multiple nonbusiness disciplines in order to provide a foundation for understanding the urban environments within which logistics activities increasingly occur.</i>	<i>The research identifies three distinct urban logistics stakeholder groups, each of which influences, directly or indirectly, urban logistics operations, and then uncovers four urban environmental characteristics that impede the implementation of traditional logistical systems and processes.</i>
Dynamic Capabilities	Sandberg (2021)	Dynamic capabilities for the creation of logistics flexibility – a conceptual framework	<i>The purpose of this research is to develop a conceptual framework in which dynamic capabilities (DCs) for the creation of logistics flexibility are outlined, and elaborate it further based on empirical data from a case study at a Swedish fast fashion retailer.</i>	<i>The proposed framework draws on the three DC classes of sensing, seizing and reconfiguring, and how they underscore logistics range and logistics response flexibility. The framework also distinguishes between DC classes and logistics flexibility that occur at operational, structural and strategic levels.</i>
Social Exchange Theory	Lu et al. (2021)	How Informal Exchanges Impact Formal Sourcing Collaboration (and What Supply Managers Can Do about It)	<i>Our research focuses on the effects of informal exchanges that have taken place prior to the formal establishment of the sourcing team. We investigate how a colleague from another function reacts to a supply manager's rejection of informal advice, and how the supply manager can mitigate the potential negative effects of this reaction on future formal sourcing collaborations.</i>	<i>The results suggest that previous informal advice-rejection reduces both an advisor's willingness to provide formal advice to the advice-receiving supply manager in an ensuing cross-functional sourcing team and the expected cohesion of such a team, as compared to when the advice was heeded.</i>
Institutional Theory	Klymenko and Liličević (2022)	Sustainability practices during COVID-19: an institutional perspective	<i>The purpose of this paper is to investigate how sustainable practices in supply chains are affected by the COVID-19 pandemic through the lens of institutional theory.</i>	<i>The study suggests that during the COVID-19 pandemic, companies tend to focus on short-term decisions and economic issues. The long-term focus on sustainability has, however, increased at the cluster level.</i>
Resource Dependence Theory	Al-Babtain and Durugbo (2020)	Management strategies for supply risk dependencies: empirical evidence from the gulf region	<i>The purpose of this study is to propose a conceptual model for managing supply risk (SR) dependencies in regional supply networks (SNs). Grounded on resource dependency theory (RDT), the research conceptualizes the management of SR as buffering and bridging strategies that enable organizations to redefine their SN to cope with SR and as a three-stage transformation mechanism.</i>	<i>The analysis finds that underpinning 'second-order' buffering and bridging strategies from RDT are four main 'first-order' RM strategies: unit independence, organizational adaptation, network reconfiguration and environmental acceptance.</i>
Stakeholder Theory	Sandberg et al. (2018)	Exploring value creation and appropriation in the reverse clothing supply chain	<i>The purpose of this paper is to explore the processes of value creation and appropriation among companies in a reverse clothing supply chain.</i>	<i>Results of different types of value and value co-creation explain the relatively high degree of collaboration among members in the "beginning" of the reverse supply chain. Here, collaboration outmanoeuvres the traditional value appropriation mechanism of price negotiation.</i>
Relational View	Jazairy et al. (2021)	Unravelling collaboration mechanisms for green logistics: the perspectives of shippers and logistics service providers	<i>The green logistics literature remains undecided on how collaboration between shippers (i.e. logistics buyers) and logistics service providers (LSPs) may facilitate green logistics practices (GLPs). This paper identifies two types of collaboration mechanisms, relation specific and knowledge sharing, to systematically examine their influence on facilitating the different types of GLPs – as seen by shippers versus LSPs.</i>	<i>The findings reveal that neither of the actors consistently favour a certain type of collaboration mechanism for facilitating all types of GLPs. Although it was found that both actors share the same view on the role of collaboration mechanisms for some GLPs, their views took contrasting forms for others.</i>
Agency Theory	Wiedenmann and Größler (2021)	Supply risk identification in manufacturing supply networks	<i>Managing supply risk is gaining in importance in the tightly interconnected global economy. Identifying the relevant risks is the foundation of any risk management process. Therefore, the purpose of this paper first is to provide a short introduction to supply risk management, before focussing on the identification of such risks in more detail.</i>	<i>Based on the definition and delimitation of supply risk, a categorization of supply risks is developed. The relevant literature, as well as expert interviews, lead to the distinction of six supply risk dimensions: quality, delivery, collaboration, economic, ambience and compliance. A total of 27 risk factors can be assigned to these dimensions. A holistic foundation for the management of supply risk is thus created.</i>
Knowledge Based View	Ötman et al. (2021)	A knowledge-based view of analytics capability in purchasing and supply management	<i>The purpose of this study is to elaborate on how analytics capability develops within the PSM function. This study is an in-depth exploration of how analytics capability develops within the purchasing and supply management (PSM) function.</i>	<i>Building on the knowledge-based view of the firm, the authors offer a theoretical explanation of our observations, highlighting the user-driven side of analytics development, which has largely been unrecognized by prior literature. The authors also offer an explanation of the observed dual role that analytics takes in cross-functional initiatives.</i>
Social Capital	Moshiri and Vanpoucke (2021)	Building Successful NGO-Business Relationships: A Social Capital Perspective	<i>The present study seeks to understand how NGOs and businesses can overcome these additional challenges. From a practitioner's viewpoint, we not only strive to acknowledge the complementarity of NGOs and businesses for implementing successful relationship practices but also seek to understand how these understudied cross-sector relationships can be successfully built.</i>	<i>In summary, our analysis enabled us to present a more generic process framework for creating social capital within NGO-business relationships.</i>

APPENDIX 1: EXAMPLES OF PAPERS FOR EACH OF THE 25 MOST FREQUENTLY IDENTIFIED THEORIES (CONT'D)

Identified theory within the article	Article	Title/Focus	Theory usage / purpose	Findings
General Systems Theory	Baier et al. (2020)	Hidden allies for value chain responsibility? A system Theory perspective on aligning sustainable supply chain management and trade compliance	The paper investigates how the alignment of two corporate functions, sustainable supply chain management (SSCM) and trade compliance (TC) can help companies to take corporate value chain responsibility (VCR).	The paper spells out a research agenda and formulates testable propositions for further investigating the interplay of environment and system as well as the structural options for a functional alignment of SSCM and TC.
Information Processing Theory	Ashenbaum and Maltz (2017)	Purchasing-logistics integration and supplier performance: an information-processing view	The purpose of this paper is to develop a purchasing-logistics integration (PLI) conceptualization along two dimensions: mutual responsibility and integrative efforts. This conceptualization is then tested as to whether it provides any insights for supplier performance.	Purchasing managers found mutual responsibility to positively influence supplier delivery speed, whereas logistics managers found it to positively influence supplier price performance.
Service-Dominant Logic	Chen et al. (2016)	Ensuring Returns Management Software Effectiveness through Joint Development Orientation	Returns management has gained managerial and academic attention in recent years, but it still remains a significant challenge for many companies due to its unpredictable and irregular nature. The current study contributes to existing literature by focusing on the effectiveness of externally developed customizable software.	Drawing upon the service dominant (S-D) logic and using empirical survey data, this study not only confirmed the positive impacts of returns management software effectiveness on firm market performance but also identified a joint development orientation as crucial to ensuring returns management software effectiveness.
Risk Management	Durach et al. (2017)	Disruption causes and disruption management in supply chains with Chinese suppliers	The purpose of this paper is to identify and rank supply chain disruption causes for Western buying firms in the Chinese market, to identify supplier-relationship-specific mitigation strategies to avoid and resist such disruptions, and to develop and propose a framework of relational supply chain disruption management with Chinese suppliers.	The authors identified and ranked 22 disruption causes in China for Western buying firms. Evaluating the five most urgent causes, 43 mitigation strategies could be identified that build on implementing strategic relationships with Chinese suppliers.
Game Theory	Carvalho et al. (2021)	Supply chain collaboration: differing perspectives of Brazilian companies	This article examines the extent of collaboration experienced by 191 Brazilian shippers, logistics service providers (LSPs) and carriers in their logistics operations in urban freight transport. This study investigates relationships over time, the type of service and the nuances associated with the frequency of meetings, frequency of technical visits and frequency of training.	The results indicate that in the triad, LSPs are the strongest supporters of collaboration over time regardless of whether the logistics service is shared or dedicated; shippers demonstrate the weakest support for collaboration and prioritize relationships of one to three years in length.
Social Network Theory	Carnovale and Yeniyurt (2015)	The Role of Ego Network Structure in Facilitating Ego Network Innovations	In this research, we contribute to the literature of supply chain innovations by developing and testing theoretically derived hypotheses regarding the effect of network structure on innovation output and distribution, as measured by the aggregate count and variance in the distribution of patents of the ego network in which a firm exists.	We find support for the idea that innovation in a supply chain is highly dependent upon the network structure of the interfirm relationships. Thus, it is not just what you know or how well you individually innovate, but also how well the firm can leverage its supply network connections that engender superior innovation outcomes.
Fuzzy Set Theory	Rehman and Ali (2022)	Enhancing healthcare supply chain resilience: decision-making in a fuzzy environment	This research study aims to prioritize resilience strategies for healthcare supply chains while considering the risks that most severe, probable to occur and have the lengthiest periods of recovery.	Results indicate that Industry 4.0, multiple sourcing, risk awareness, agility and global diversification of suppliers, markets and operations are the most significant resilience strategies.
Network Theory	Eriksson et al. (2022)	Transport in supply networks	The purpose of the paper is to analyse how transport activities are embedded in supply chains and networks.	The paper concludes that transport activities are embedded in two related settings – the supply chain setting and the transport network setting – with implications for how adjustments can be made to increase transport performance.
Resource Advantage Theory	Doering and Suresh (2016)	Forecasting and Performance: Conceptualizing Forecasting Management Competence as a Higher-Order Construct	This note empirically validates forecasting management competence (FMC) as a higher-order construct based on four underlying sets of practices: internal integration, forecasting process quality, effective use of advanced systems, and evaluation of forecasting.	The study provides insights to the relative effectiveness of the four sets of forecasting practices constituting FMC. A mediator-moderator analysis shows that forecast accuracy is not a mediator or a moderator between FMC and the other two outcome variables of cost reduction and delivery performance.
Organizational Information Processing Theory	Zhu et al. (2018)	How supply chain analytics enables operational supply chain transparency	Drawing on organizational information processing theory, the purpose of this paper is to examine how supply chain analytics (SCA) capabilities support operational supply chain transparency.	The results reveal that: analytics capability in support of planning functions indirectly affects organizational supply chain transparency (OSCT) via SCA capabilities in source, make, and deliver functions; SCA capabilities in source, make, and deliver positively influence OSCT; and supply uncertainty moderates the relationship between SCA capabilities in make and OSCT.
Competitive Advantage	Dai et al. (2015)	How Environmental Management Competitive Pressure Affects a Focal Firm's Environmental Innovation Activities: A Green Supply Chain Perspective	Drawing on the Schumpeterian perspective of competition, this research examines how the perception of rival firms' green success influences a firm to pursue and produce environmental innovation through its green supply chain integration activities.	Specifically, findings suggest that green supply chain integration has a positive impact on developing incremental environmental innovation, while only customer integration has a significant positive impact on developing radical environmental innovation.
Diffusion of Innovation	Mathauer and Hofmann (2019)	Technology adoption by logistics service providers	The purpose of this paper is to reveal the effects of different technology access modes on the successful integration of technological innovations. From the perspective of logistics service providers (LSPs), theoretical and managerial implications for the process of technology adoption are discovered.	The findings illustrate that the technology access modes (make, buy and ally) pre/judge the success of the integration process in terms of technology acceptance, as well as process quality, speed and costs of integration. This relationship is moderated by technology-, firm-, environment- and relation-related factors.
Resource Orchestration Theory	Gügor et al. (2022)	Utilizing blockchain technology for supply chain transparency: A resource orchestration perspective	This research designed a case study around a BCT implementation project between a small artisan coffee producer and a startup BCT service provider.	Using the resource orchestration perspective, the findings result in theoretical insights about how the mechanisms in structuring, bundling, and leveraging processes operate to offer SCT to stakeholders, and the value creation derived as a result.

APPENDIX 2: YEARLY DISTRIBUTION OF MOST FREQUENTLY IDENTIFIED THEORIES FROM 2010 TO 2022

25 most frequently identified theories	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Resource Based View	15.22%	27.27%	20.51%	16.98%	23.21%	13.95%	20.41%	14.49%	18.24%	19.19%	15.71%	20.51%	11.69%
Transaction Cost Economics	15.22%	11.36%	17.95%	15.09%	12.50%	4.65%	8.16%	10.87%	8.78%	9.09%	10.00%	5.13%	7.79%
Contingency Theory	6.52%	2.27%	0.00%	9.43%	1.79%	6.98%	12.24%	8.70%	10.81%	6.06%	1.43%	3.85%	6.49%
Dynamic Capabilities	6.52%	2.27%	2.56%	5.66%	1.79%	6.98%	0.00%	2.90%	3.38%	4.04%	7.14%	10.26%	16.88%
Social Exchange Theory	8.70%	9.09%	2.56%	5.66%	3.57%	11.63%	2.04%	6.52%	3.38%	10.10%	2.86%	3.85%	3.90%
Institutional Theory	2.17%	6.82%	0.00%	3.77%	3.57%	6.98%	8.16%	2.90%	3.38%	14.14%	4.29%	3.85%	3.90%
Resource Dependence Theory	2.17%	2.27%	0.00%	3.77%	1.79%	6.98%	6.12%	7.97%	4.05%	4.04%	7.14%	3.85%	7.79%
Stakeholder Theory	0.00%	2.27%	2.56%	7.55%	5.36%	2.33%	4.08%	7.25%	8.11%	2.02%	4.29%	3.85%	3.90%
Relational View	4.35%	9.09%	0.00%	5.66%	8.93%	6.98%	6.12%	4.35%	1.35%	4.04%	2.86%	2.56%	2.60%
Agency Theory	8.70%	0.00%	0.00%	3.77%	0.00%	4.65%	2.04%	5.07%	5.41%	3.03%	8.57%	3.85%	2.60%
Knowledge Based View	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.35%	2.03%	3.03%	1.43%	5.13%	2.60%
Social Capital	2.17%	2.27%	5.13%	5.66%	3.57%	9.30%	2.04%	1.45%	4.73%	2.02%	0.00%	6.41%	0.00%
General Systems Theory	4.35%	0.00%	7.69%	3.77%	0.00%	0.00%	4.08%	2.17%	3.38%	4.04%	1.43%	2.56%	3.90%
Information Processing Theory	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4.35%	1.35%	2.02%	10.00%	0.00%	1.30%
Service-Dominant Logic	6.52%	6.82%	5.13%	1.89%	19.64%	2.33%	6.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Risk Management	6.52%	2.27%	7.69%	1.89%	0.00%	4.65%	4.08%	1.45%	1.35%	1.01%	4.29%	1.28%	1.30%
Game Theory	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.45%	4.73%	2.02%	4.29%	3.85%	6.49%
Social Network Theory	2.17%	2.27%	5.13%	0.00%	3.57%	4.65%	2.04%	2.90%	2.03%	1.01%	2.86%	2.56%	1.30%
Fuzzy Set Theory	2.17%	0.00%	2.56%	0.00%	0.00%	0.00%	0.00%	2.90%	3.38%	1.01%	1.43%	3.85%	2.60%
Network Theory	0.00%	2.27%	0.00%	0.00%	3.57%	2.33%	2.04%	1.45%	2.03%	2.02%	4.29%	2.56%	2.60%
Resource Advantage Theory	2.17%	4.55%	2.56%	3.77%	1.79%	0.00%	4.08%	2.17%	0.68%	1.01%	2.86%	0.00%	1.30%
Organizational Information Processing Theory	0.00%	0.00%	2.56%	1.89%	1.79%	0.00%	2.04%	1.45%	4.73%	0.00%	0.00%	2.56%	2.60%
Competitive Advantage	4.35%	4.55%	10.26%	1.89%	1.79%	4.65%	0.00%	0.72%	0.68%	1.01%	0.00%	1.28%	0.00%
Diffusion of Innovation	0.00%	2.27%	5.13%	1.89%	0.00%	0.00%	2.04%	0.72%	2.03%	3.03%	0.00%	2.56%	1.30%
Resource Orchestration Theory	0.00%	0.00%	0.00%	0.00%	1.79%	0.00%	2.04%	1.45%	0.00%	1.01%	2.86%	3.85%	5.19%

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