

Energizing relationships in supply chains: unleashing partitional ambidexterity for enhanced relational performance

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Abstract

Purpose – This study aims to investigate the effect of socialization facilitated by the logistics service providers (LSPs) on partitional buyer-supplier ambidexterity and its resulting impact on supply chain (SC) relational performance.

Design/methodology/approach – The basis of our research is founded on Network Theory and enhanced by the principles of Social Capital Theory. Building on these theories, we designed a questionnaire and collected data from 1,050 European companies across 350 three-tier supply chains, with each company operating in only one supply chain.

Findings – The results indicate that while LSP-stimulated socialization has a positive effect on partitional buyer-supplier ambidexterity, the contribution of its components (i.e. buyer socialization and supplier socialization) differs in both models in terms of significance and strength. The findings also demonstrate that the effect of partitional buyer-supplier ambidexterity on SC relational performance is strong and positive. The results suggest that partitional buyer-supplier ambidexterity partially mediates the relationship between LSP-stimulated socialization and SC relational performance.

Research limitations/implications – As the concept of partitional supply chain ambidexterity is a new research topic, further investigation is required. Firstly, it would be interesting to employ a temporal perspective when examining the interdependence of buyer-supplier exploration and exploitation in supply chains. As LSPs become stronger and more equal partners in supply chains, it would also be worthwhile investigating whether they sometimes exploit their advantageous position within the triad at the expense of buyers and suppliers. This behavior could lead to fomenting conflicts and allow LSPs to manipulate buyers and suppliers for their own benefit.

Practical implications – LSPs can act as orchestrators – acquiring assets, creating synergies, and fostering social relationships. These issues align with network theory, which demonstrates that LSPs can enhance both the short-term refinement and long-term development of buyer-supplier partitional ambidexterity. Although the LSP may create a favorable environment that positively affects buyer-supplier partitional ambidexterity, it is the buyer and supplier's role to initiate and maintain it. The LSP merely energizes relationships; the connected companies must engage in distinct explorative and exploitative actions themselves to truly add value to their performance. Understandably, the LSP will not undertake these actions for them. Developing such an environment can lead to new ideas, fresh initiatives, and innovative concepts, which can mitigate opportunism and self-interest, ultimately resulting in improved performance. At the end of the day, it is the buyer and supplier that must cultivate these skills themselves, even when the LSP provides favorable conditions.

Social implications – The study highlights the increasingly significant role that LSPs play in fostering strong relationships among supply chain partners and creating a more dynamic environment that supports social interaction and networking. Establishing a social community is especially crucial when the relationship between the buyer and supplier is strained, which can lead to conflicts. In such situations, an impartial third party, like the LSP, can act as a mediator, helping to alleviate tension between the buyer and supplier. The LSP effectively takes on a bridging role, connecting the two parties and encouraging socialization.

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Originality/value – By examining the effects of LSP-facilitated socialization on partitional buyer-supplier ambidexterity and SC relational performance, this study empirically demonstrates how dyadic relationships within triads influence one another, thereby offering insights into multi-tier relational dynamics.

Keywords Triad, Socialization, Partitional buyer-supplier ambidexterity, Performance

Paper type Research article

1. Introduction

Partitional ambidexterity is an inherently paradoxical phenomenon (Simsek, 2009; Malik *et al.*, 2019), defined as the simultaneous pursuit of exploitation and exploration (Brix, 2019; Yan *et al.*, 2021) distributed across two organizations. Exploitative activities focus on leveraging existing competencies through stability, refinement, efficiency, and incremental improvements to existing products. In contrast, explorative activities emphasize risk-taking, experimentation, flexibility, rapid responsiveness, opportunity discovery, and the development of radical innovations (Simsek, 2009; O'Reilly and Tushman, 2013; Brix, 2019).

Partitional ambidexterity can occur in the functional domain by engaging in explorative R&D partnerships and/or exploitative commercialization collaborations, or in the structural domain by establishing new partnerships to generate knowledge while relying on existing partners to exploit it (Partanen *et al.*, 2020). It can emerge through buyer-supplier relationships, as illustrated by Apple Inc. and Foxconn. Foxconn, the world's largest contract manufacturer, specializes in efficient, large-scale production, enabling exploitative activities such as process optimization and cost efficiency. In contrast, Apple focuses on explorative activities, including innovation in product design and technological integration (e.g. new iPhone features), reflecting its pursuit of new knowledge and markets. A similar pattern is evident in Huawei's efforts to reduce reliance on Qualcomm by developing its Kirin chipsets (Tao *et al.*, 2022). To support this, Huawei partnered with SMIC, which adapted its manufacturing capabilities to meet Huawei's needs (Matsui, 2024). Huawei emphasizes exploration through advanced chip design and technological independence, while SMIC focuses on exploitation via process optimization and production scaling. Together, these partnerships demonstrate how integrating distinct activities across firms enables partitional ambidexterity.

Interestingly, both examples illustrate that, in practice, drawing a strict line between pure exploitation and pure exploration in partitional ambidexterity is often difficult. For instance, although Foxconn's main contribution is exploitative, elements of exploration are evident, including technological coordination, production innovation, and the joint adoption of advanced manufacturing technologies (e.g. robotics and automation). Apple's requirements and specifications, often at the technological frontier, compel Foxconn to adapt and innovate within its manufacturing processes. It blurs the boundary of pure exploitation and feeds insights back into Apple's design and manufacturing practices. Similarly, in the second example, SMIC does not engage in pure exploitation, as upgrading its DUV processes under technological constraints involves exploratory activities. Nevertheless, its primary role remains production-focused exploitation, while Huawei drives product-level exploration.

Although prior research has empirically examined the concept of supply chain ambidexterity, the majority has been primarily confined to analyses of individual companies (Cao *et al.*, 2023; Kao *et al.*, 2024). Furthermore, there is a noticeable shortage of empirical and quantitative research focusing on partitional ambidexterity within supply chains. Most prior research offers a conceptual basis for partitional ambidexterity (Simsek, 2009; Brix, 2019) or is grounded in qualitative analysis (Roscoe and Blome, 2019). Given that this is a relatively new concept, empirical evidence on its effects on relational performance in inter-organizational arrangements remains scarce.

Achieving partitional ambidexterity requires specialized coordination to ensure that both exploitation and exploration are effectively realized. In this study, we argue that logistics service providers, as third-party actors within the buyer-supplier dyad, can play a pivotal role in facilitating and sustaining partitional ambidexterity.

The evolving role of logistics service providers (LSPs) in shaping supply chain relationships has a long history. Initially, they served as providers of basic, non-essential services. Over time, however, their role has become more critical, as they are now responsible for managing effective inter-organizational logistics activities, determining customer satisfaction, and ensuring a competitive advantage (Qin *et al.*, 2021). In other words, LSPs today empower businesses by not only delivering essential logistics services such as transportation, warehousing, and packing, but also by offering strategic, market-oriented solutions such as supply chain consulting and lead logistics provider services (Langley and Infosys Consulting, 2020; Vlachos and Polichronidou, 2024). For instance, Chow *et al.* (2007) described the example of Eastern Logistics Limited (ELL), a medium-sized LSP company, which supported upstream and downstream supply chain partners in establishing beneficial relationships by combining RFID and IT applications. Van Hoek (2014) highlighted the partnership between United Parcel Service Inc. (UPS) and Cisco, where UPS handles both inbound supplier relationships and outbound customer relationships for Cisco across Europe, the Middle East, and North Africa.

As the logistics service sector continues to grow, major supply chain players increasingly seek to engage more deeply and broadly with logistics service providers, underscoring the practical relevance of investigating these relational outcomes. LSPs can deliver a broader and more advanced portfolio of functions that extend beyond traditional logistics services. These include fostering socialization among companies, facilitating collaboration between companies, and providing opportunities to learn about each other's culture, social norms, and shared understandings. In doing so, LSPs initiate the social mechanism to help convey the values, skills, expected behaviors, and social knowledge of and among companies in supply chains. As a result, major supply chain companies (such as buyers and suppliers) can remain focused on their core activities while operating under more favorable conditions facilitated by LSPs. This strategic partnership empowers organizations to refine their operational models, sustaining a competitive advantage (Simsek, 2009) through enhanced relational benefits and thus improved overall supply chain performance. Specifically, since partitional ambidexterity underscores the role of structural interdependence between engaged actors, it may have a positive effect on relational performance (Brix, 2019) that cannot be obtained by either partner alone (Carter *et al.*, 2017; Swierczek, 2025).

Although prior research has highlighted the growing significance of LSPs (Shi *et al.*, 2016; Friedrich *et al.*, 2022; Vlachos and Polichronidou, 2024), their leading role still seems to be neglected in supply chain literature. As a consequence, LSPs are often treated as the “forgotten actors of supply chains” (Fabbe-Costes *et al.*, 2009; Vlachos and Polichronidou, 2024) rather than supply chain orchestrators (Zacharia *et al.*, 2011; Friedrich *et al.*, 2022). This calls for more research on the growing role of LSPs in supply chains, along with their capacity to provide essential competencies (Swierczek, 2023). Previous studies have emphasized the significance of trust, commitment, and long-term orientation as key factors for successful collaboration between LSPs and their partners (Huo *et al.*, 2015; Prataviera *et al.*, 2023). Nonetheless, no studies have examined how LSPs foster mutual socialization among supply chain firms – through which employees, managers, and partners learn about each other's cultures and develop shared norms. Yet socialization remains a critical facilitator of inter-organizational learning and the development of supply chain ambidexterity (Gibson and Birkinshaw, 2004; Kohtamäki, 2010).

To address this gap, we investigate how LSP-facilitated socialization influences partitional buyer-supplier ambidexterity and supply chain (SC) relational performance. In doing so, we examine a transitive triad comprising the supplier, its buyer, and the LSP, a structure typical of service-oriented supply chain settings (Choi, 2023). Using a transitive triad as the unit of analysis, we aim to capture network dynamics (Choi and Holmen, 2023) by investigating how changes in dyadic relationships established with LSPs alter the other relationship within the triad (Gemente *et al.*, 2024). In our study, the LSP fosters socialization with the buyer and supplier, which then affects the buyer-supplier link.

Building on existing research into Network Theory and Social Capital Theory, this study aims to contribute to the discourse by addressing the following research questions.

- RQ1. How does socialization, stimulated by LSPs, impact partitional buyer-supplier ambidexterity within supply chains, and how does this ambidexterity subsequently relate to supply chain relational performance?
- RQ2. Does partitional buyer-supplier ambidexterity mediate the relationship between LSP-simulated socialization and SC relational performance?

To address the research questions, we developed two models. One model includes partitional ambidexterity formed of exploitation pursued by the buyer and exploration by the supplier, while the other model covers partitional ambidexterity formed of supplier exploitation and buyer exploration. Using these two models, our study provides empirical evidence that shows that LSPs play a strategic and impactful role in supply chains. Going beyond traditional views, which emphasize their role in fostering trust and commitment, we show that LSPs can actively drive partitional buyer-supplier ambidexterity, thus supporting supply chains in developing exploration and exploitation. Secondly, our research advances and empirically validates the concept of partitional ambidexterity, which, in line with our research, can be enhanced by socialization incentivized by LSPs. More importantly, we demonstrate that buyer-supplier partitional ambidexterity fosters dynamic collaboration and sustainable growth among supply chain partners, ultimately leading to stronger SC relational performance. Finally, our research reveals that buyer-supplier partitional ambidexterity plays a key mediating role, acting as a link between LSP-driven socialization and SC relational performance.

The remainder of this paper is organized as follows. First, we outline the theories that form the conceptual basis for the research model development. Then we present the literature review and formulate the hypothesized relationships between the constructs. Following the research methodology, including the characteristics of the sample, the data collection process, and the outcome of the analysis, we provide a discussion of the results. Finally, we provide research limitations and further research avenues.

2. Theoretical framework and research hypotheses

2.1 Conceptual grounding and model development

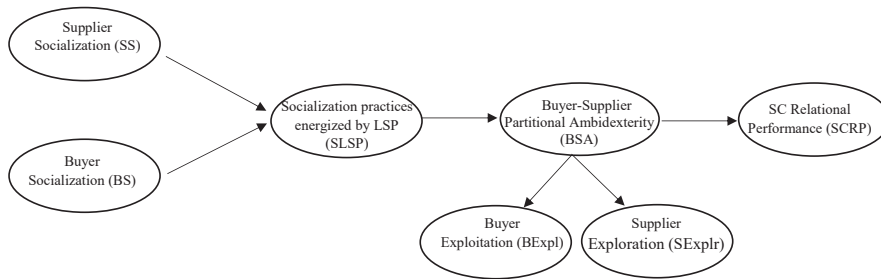
The conceptual foundation for our research was derived from Network Theory and complemented by the tenets of Social Capital Theory. We specifically selected Network Theory as it concentrates on the mechanisms and processes that interact with network structures to produce certain outcomes for individuals and groups (Borgatti and Halgin, 2011).

In line with NT, LSPs not only deliver supply chain-wide efficiency but also help firms benefit from network relationships. The prominent role of LSPs stems from their ability to orchestrate activities within the supply chain (Zacharia et al., 2011). To further elaborate on the social aspect of network relationships formed by LSPs within the supply chain, we borrowed from the underpinnings of Social Capital Theory. In line with this perspective, firms establish a basis for mutually cooperative and beneficial relationships, building social capital networks (Nahapiet and Ghoshal, 1998). Social capital is derived from the relationships established by companies in the network (Coleman, 1990). This theoretical lens provided us with an understanding of the role of the LSPs as *tertius iungens* (Pathak et al., 2014; Prataviera et al., 2023), which facilitates sufficient trust to make collaboration possible.

To investigate the hypothesized relationships, we developed two research models, as depicted in Figure 1.

One model includes partitional ambidexterity formed of exploitation pursued by the buyer and exploration by the supplier, while the other model covers partitional ambidexterity formed by supplier exploitation and buyer exploration. Building on prior studies and examples derived from business practice, we consider two models of partitional ambidexterity led by the buyer

Model 1 - Buyer-Supplier Partitional Ambidexterity (Buyer Exploitation/Supplier Exploration Model)



Model 2 - Buyer-Supplier Partitional Ambidexterity (Buyer Exploration/Supplier Exploitation Model)

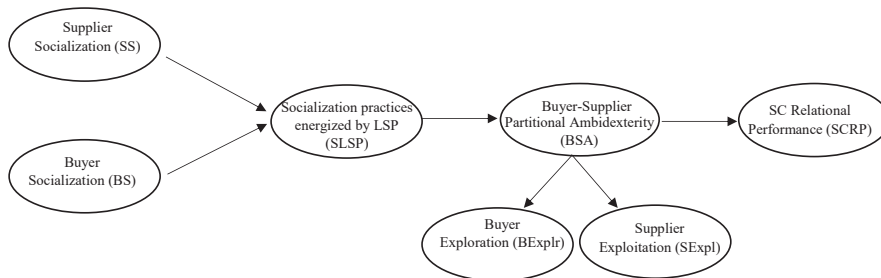


Figure 1. Research models. Model 1 – Buyer-Supplier Partitional Ambidexterity (Buyer Exploitation/Supplier Exploration Model). Model 2 – Buyer-Supplier Partitional Ambidexterity (Buyer Exploration/Supplier Exploitation Model). Source: Author's own work

and supplier individually (Gibson and Birkinshaw, 2004; Simsek, 2009; Roscoe and Blome, 2019). Contrary to reciprocal ambidexterity, which highlights the mutual interplay between exploitation and exploration within and between organizations (Callegari and Rai, 2021), buyer-supplier partitional ambidexterity tends to develop structures, processes, and cultures that facilitate a specific type of exploration or exploitation. Another reason for developing two individual models is our intention to minimize the loss of information caused by forming an overly complex structure of constructs (Hair *et al.*, 2022). This would be the case if two types of ambidexterity were included in one model.

To develop two separate models, we used the input-process-output framework provided by Simsek (2009). The model covers the antecedents of partitional ambidexterity (i.e. at the interfirm level, including buyer and supplier socialization fostered by the LSP), components of partitional buyer-supplier ambidexterity (i.e. buyer exploitation/supplier exploration and buyer exploration/supplier exploitation), and its consequences (i.e. performance).

To advance the models, we used the matched dyadic approach (Roh *et al.*, 2013), which allowed us to consider the level of agreement and symmetry within each dyad, as opposed to the analysis of dyads side-by-side as two separate and independent groups (Whipple *et al.*, 2015). In matched dyads, two actors (e.g. buyer and supplier) report on the same issue (e.g. exploration/exploitation) from their perspective.

2.2 The effect of the socialization process on buyer-supplier partitional ambidexterity

The concept of supply chain ambidexterity has gained significant scholarly attention (Partanen *et al.*, 2020; Wamba *et al.*, 2020; Ambulkar *et al.*, 2023; Iftikhar *et al.*, 2024). Building on March's (1991) distinction between exploration (experimentation, flexibility, divergent

thinking) and exploitation (efficiency, refinement, focus), this framework has been widely applied in supply chain management (Karttunen *et al.*, 2022; Cao *et al.*, 2023). Supply chain exploration involves novel problem-solving, risk-taking, and experimentation that foster new forms of buyer-supplier collaboration, while supply chain exploitation emphasizes incremental improvements to existing processes and technologies (Karttunen *et al.*, 2022; Partanen *et al.*, 2020; Wamba *et al.*, 2020; Ambulkar *et al.*, 2023).

Regardless of the various approaches to the relationship between exploitation and exploration, we conceptualize supply chain ambidexterity as the simultaneous pursuit of both exploration and exploitation (Ambulkar *et al.*, 2023; Swierczek, 2024). It emerges from coexisting contradictory structures, processes, and cultures across organizations in the supply chain (O'Reilly and Tushman, 2021) and reflects so-called partitional ambidexterity rooted in Duncan (1976). Accordingly, exploitation and exploration can be distributed within and across firms to jointly achieve high levels of both (Foss and Kirkegaard, 2020), such that one organization's exploitative practices may complement another's exploratory practices.

In our study, partial ambidexterity refers to the ability to perform exploration and exploitation in structurally separate organizational units with different strategies (Sohani and Singh, 2017; Karttunen *et al.*, 2022).

As indicated by Li (2019), the concept of partitional ambidexterity represents the separation of responsibilities at the micro level (i.e. the individual organization level), most often represented by buyers and suppliers within supply chains (Im and Rai, 2008). This separation, however, should be coupled with an integration or coordination mechanism (Larsson *et al.*, 1998), which may require, for instance, appointing an active and capable integrator between two organizations (Gilbert and Bower, 2002). We argue that the LSP can unite companies by providing them with the values, skills, expected behaviors, and social knowledge of and among organizational actors (Zacharia *et al.*, 2011). It can serve as a *tertius iungens* ("the third that joins") that unites and promotes social capital among disconnected organizations to achieve synergistic effects (Pathak *et al.*, 2014). In a similar vein, Prataviera *et al.* (2023) showed that LSPs can actively foster supply chain socialization and build trustworthy relationships.

In line with Social Capital Theory, organizational socialization can be defined as a process by which a party comes to appreciate the values, abilities, expected behaviors, and social knowledge necessary for assuming an organizational role and for participating as a member of an organization (Louis, 1980). In other words, socialization refers to the process of how employees, managers, and supply chain partners interact with each other, and can help explain why some firms are more successful in managing supply relationships than others (Cousins *et al.*, 2006). As indicated by Cousins *et al.* (2008), socialization mechanisms within the context of a supply chain relationship enable partners to learn about each other's culture, creating social norms and shared understandings between the parties. This is achieved through practices such as frequent on-site visits, joint workshops, cross-functional teams, or a matrix-style reporting structure, which help foster relationships within the supply chain (Cousins *et al.*, 2006). While the explicit role of social mechanisms as predictors of partial ambidexterity has not yet been investigated, prior studies suggest that social capital and its components can shape organizational ambidexterity (Rogan and Mors, 2014). For instance, Aslam *et al.* (2022) demonstrated that relational capital has a positive influence on supply chain ambidexterity. In a more specific way, Daskalopoulos and Machek (2024) showed that both bonding and bridging social capital promote ambidexterity. By the same token, Yang *et al.* (2024) suggested that relational capital gained from supplier collaboration is harnessed by a focal firm to bolster organizational ambidexterity. More broadly, prior research has shown a positive relationship between informal ties with other organizations and ambidextrous behavior, supporting the argument that these ties expand available outside options and, in turn, increase companies' autonomy in resource allocation (Kleinbaum and Tushman, 2007; Rogan and Mors, 2014). These social initiatives pave the way for the establishment and development of buyer-supplier partitional ambidexterity stimulated by the LSP. Accordingly, we propose that the social

mechanisms stimulated by the LSP facilitate buyer-supplier partial ambidexterity, as expressed in the following hypothesis.

- H1. LSP-stimulated socialization has a positive effect on partitional buyer-supplier ambidexterity in supply chains.

2.3 The effect of partitional buyer-supplier ambidexterity on SC relational performance

Relational performance emerges from genuine interactions between two parties and is reflected in jointly achieved outcomes within an exchange relationship (Swierczek, 2024). It cannot be created in isolation by either partner (Carter *et al.*, 2017); instead, it is co-produced and jointly appropriated within a dyad (Haugland *et al.*, 2021). Relational performance also generates complementary effects that help us understand relational phenomena as both influencing and being influenced by forces at multiple levels of analysis (Richter and Ennen, 2010). At the lower level, we focus on the dyad, where relational performance is generated and attributed to individual participants. At the higher level, we examine a triad in which supply chain relational performance emerges from the relational outputs produced by interconnected dyads.

Prior research indicated that the application of organizational ambidexterity increases flexibility and efficiency (Caniëls and Veld, 2019). Syed *et al.* (2020) underscored that while the simultaneous pursuit of exploitation and exploration may have a suppressive effect in the short term, it ultimately enhances operational capabilities over the long term through the complementary impact of both. This simultaneous pursuit fosters the development of new collaborative relationships and supports comprehensive decision-making (Han *et al.*, 2020). Similarly, Brix (2019) emphasized the need for balance in organizational ambidexterity, which is considered a dynamic capability promoting long-term performance. Rojo *et al.* (2016) likewise showed that supply chain ambidexterity enhances firm flexibility, which in turn builds supply chain competence and improves overall performance. Finally, Kristal *et al.* (2010) concluded that an ambidextrous supply chain strategy aligns with manufacturers' combinative competitive capabilities – the ability to excel simultaneously in quality, delivery speed, process flexibility, and low cost – and is associated with superior business performance. Moreover, other research highlighted that supply chain ambidexterity can improve performance by addressing the competence trap, which arises from an overreliance on existing skills, and the failure trap, which results from an excessive emphasis on developing new skills (Ambulkar *et al.*, 2023). As highlighted by Peronard and Brix (2019), companies use existing linkages to make sense of the outputs and joint activities they undertake. In this vein, Moradlou *et al.* (2025) suggested that stronger engagement between buyers and suppliers enhances efficiency by leveraging market insights and streamlining operations. Similarly, Im and Rai (2008) found that both explorative and exploitative practices affect the long-term performance of vendor-buyer relationships within supply chains. This strategy helps organizations balance the conflicting demands of flexible and efficient supply chains (Aslam *et al.*, 2018). Since buyer-supplier partitional ambidexterity relies on collaboration, reciprocity, openness, transparency, and partnership (Brix, 2019), we conclude that it ultimately contributes to improved relational performance within supply chains. We therefore postulate that.

- H2. Partitional buyer-supplier ambidexterity has a positive effect on SC relational performance.

2.4 Mediation

In addition to direct links, we propose a mediation link that will help to explain the connections between socialization energized by LSPs and SC relational performance.

Past studies showed that social interactions between partners play an important role in the development of social capital and relational performance (Cousins *et al.*, 2006, 2008; Petersen *et al.*, 2008). Similarly, Lambert *et al.* (1996) pointed out that relationships based on mutual trust, openness, shared risk, and shared rewards yield a competitive advantage, resulting in business performance greater than would be achieved by the firms individually. We argue that while socialization can potentially have a direct positive impact on SC relational performance, it also creates a favorable environment for initiatives that significantly enhance it (Tuan, 2017; Swierczek and Szozda, 2023). Similarly, other studies have demonstrated that trust, as a social component, not only has substantial direct effects on performance but also fosters an environment conducive to organizing principles (Kalubanga and Namagembe, 2022; Jalil *et al.*, 2024). In our model, buyer-supplier partitional ambidexterity can be such a managerial concept that mediates the link between LSP-stimulated socialization and performance. Prior studies also investigated the role of ambidexterity as the mediator between social capital and performance. For instance, Gibson and Birkinshaw (2004) demonstrated the mediating role of organizational ambidexterity in the relationship between social components and performance. Likewise, Wu *et al.* (2021) showed that ambidexterity mediates the relationship between the social components of leadership and organizational performance. Similarly, Bai *et al.* (2025) found that organizational ambidexterity serves as a mediator between the relational components of embeddedness and competitive advantage.

The need to consider the mediation of buyer-supplier partitional ambidexterity may also arise because the social mechanisms promoted by the LSP with both the buyer and the supplier generate relational dynamics. Although these dynamics are generally positive, they can unintentionally create and intensify internal tensions within the triad (Choi and Wu, 2009; Choi, 2023), especially when they do not also support the ability to balance exploration and exploitation needed for organizational ambidexterity (Gibson and Birkinshaw, 2004).

Finally, the mediating effect of buyer-supplier partitional ambidexterity can also be investigated, given that the triads in the model are assumed to generate relational performance. Therefore, by incorporating mediation, we acknowledge that establishing deep, close relationships in the two dyads (supplier-LSP and LSP-buyer) is not sufficient to fully leverage socialization to achieve relational performance. Rather, collaboration between the buyer and the supplier is also required for the third dyad to generate positive relational performance outcomes.

Bringing together disconnected organizations and improving the quality of their relationships can generate synergistic effects within a triad, benefiting LSPs as well as buyers and suppliers (Pathak *et al.*, 2014). Importantly, building on Choi (2023), we propose that buyers and suppliers engage in partitional ambidexterity to fully leverage the LSP's *tertius iungens* position – where the LSP serves the interests of all three parties – instead of acting opportunistically and fomenting conflicts within the triadic relationship. Drawing on the arguments above, we formulate the following hypothesis.

- H3. Partitional buyer-supplier ambidexterity mediates the relationship between LSP-stimulated socialization and SC relational performance.

The formulated hypotheses are then tested through empirical research.

3. Research design

3.1 Data collection and sample

Our data collection model is polyadic and involves three entities that form a triad. This means that the construct attributes cannot be properly distinguished by a single objective description (Flynn *et al.*, 2018). For this reason, to conduct data gathering, we followed Scenario 3, as recommended by Ketokivi (2019). This approach is well-matched to our research, as it focuses on examining the traits of interest that are embedded at the system level, while still collecting data from individual informants.

To enhance the generalizability of the findings, the population was stratified across the 27 European Union member states and further classified according to NACE codes (Statistical Classification of Economic Activities in the European Community), which represent the industry types of the firms forming each triad. Each triad consisted of three firms assuming the roles of supplier, buyer, and logistics service provider. Specifically, codes 10–33 in section C were used to select suppliers, codes 49–53 in section H were applied to select LSPs, while codes 1–3 in section A or 5–9 in section B were used to choose buyers. A sample frame was drawn from D&B Hoovers, which is the world's largest data cloud with over 18 million companies.

A two-stage data collection procedure was employed to select the participating firms. In the first stage, stratified random sampling was used to identify the primary informants. Of the targeted sample, 587 firms completed the questionnaire, corresponding to an approximate response rate of 11%. Following the completion of the survey by the primary contact firms, the second stage of data collection was initiated. This stage involved contacting the two additional firms pointed out by the primary contact. Consistent with [Wu et al. \(2010\)](#), the major criterion for selecting companies in the second stage was that both firms were directly involved in the manufacturing or delivery of a component incorporated into an end product received by the final customer. After matching and screening the responses, the final research sample comprised 350 complete triads (see [Table 1](#)).

Consistent with [Flynn et al. \(2018\)](#), we aimed to collect responses from multiple knowledgeable informants (from 2 to 5) within each firm, acknowledging that perceptual measures may vary across respondents ([Kumar et al., 1993](#)). Informants were instructed to discuss their perspectives with other managers and employees in their organizations and to reach a consensus prior to completing the questionnaire ([Flynn et al., 2018](#)). Respondents were selected by managers or owners based on their expertise in operations management within the firm. Each company was allowed a maximum of six weeks to conduct these internal discussions, arrive at a shared judgment, and submit the completed questionnaire. While this multiple-respondent approach increased the duration and complexity of data collection, it enhanced the rigor and reliability of the study ([Flynn et al., 2018](#)).

3.2 Questionnaire design and measures

We collected data via a questionnaire administered to three companies forming a triad. The questionnaire was tailored to each firm's role ([Wu et al., 2010](#)): items on partitional buyer–supplier ambidexterity were addressed to buyers and suppliers, while questions on LSP-fostered socialization and relational performance were directed to all three firms.

The instrument was pretested with five business experts and three academics with supply chain expertise to identify unclear or redundant items ([Vanpoucke and Ellis, 2019](#)). The final questionnaire measured LSP socialization practices, partitional buyer–supplier ambidexterity, and supply chain relational performance.

Socialization practices fostered by the LSP. This construct is modeled as a second-order formative construct comprising supplier and buyer socialization. A formative specification reflects that LSPs may socialize with buyers and suppliers independently and omitting either dimension would exclude a distinct aspect of the construct. Measures of formal and informal socialization were adapted from [Cousins et al. \(2006\)](#) to the triadic context.

Partitional buyer–supplier ambidexterity. This construct is specified as a second-order reflective construct comprising buyer exploitation–supplier exploration and buyer exploration–supplier exploitation. Consistent with buyer–supplier partitional ambidexterity ([Simsek, 2009](#)), changes in the higher-order construct are reflected in corresponding changes in dyadic exploitation and exploration ([Callegari and Rai, 2021](#); [Roldán Bravo et al., 2023](#)). Following an additive approach, managers may simultaneously pursue high levels of exploitation and exploration, aligning with the concept of combined supply chain ambidexterity ([Blome et al., 2013](#); [Zhang et al., 2020](#)). The measures of organizational

Table 1. Demographic characteristics of respondents

		Logistics service triad		
		Supplier	Logistics service provider	Buyer
Country of origin	Finland	6.6%	6.6%	6.6%
	Poland	24.8%	24.8%	25.4%
	Germany	15.7%	17.1%	17.1%
	Spain	6.9%	6.9%	7.1%
	Estonia	0.6%	0.6%	0.6%
	Sweden	4.9%	4.9%	5.1%
	Luxembourg	0.6%	0.6%	0.6%
	Austria	2.3%	2.3%	2.3%
	Romania	0.6%	0.6%	0.6%
	Lithuania	0.6%	0.6%	0.6%
	Italy	6.6%	6.6%	5.7%
	Portugal	3.4%	3.4%	3.4%
	Slovakia	0.6%	0.6%	0.6%
	France	10.3%	10.3%	10.3%
	Bulgaria	0.6%	0.6%	0.6%
	Latvia	0.6%	0.6%	0.6%
	Hungary	6.3%	6.3%	6.0%
	Slovenia	0.6%	0.6%	0.6%
	Czech	0.6%	0.6%	0.6%
	Greece	1.1%	1.1%	1.1%
	Cyprus	0.6%	0.6%	0.6%
	Croatia	0.6%	0.6%	0.6%
	Netherlands	2.3%	1.1%	1.1%
	Others	2.2%	2.0%	2.0%
Size	Small (0–49 employees)	66.3%	86.9%	98.0%
	Medium (50–249 employees)	23.7%	9.7%	0.6%
	Large (250+ employees)	10.0%	3.4%	1.4%
Position	CEO/Owner	44.3%	62.0%	82.0%
	General Manager	23.1%	11.1%	3.4%
	Medium-level Manager	20.0%	18.0%	13.1%
	Lower-level Manager	12.6%	7.7%	0.0%
	Employee	0.0%	0.0%	1.4%
	Others	0.0%	1.2%	0.2%
Source(s): Author’s own work				

exploitation and exploration for individual companies in supply chains were derived from previous research (Kristal *et al.*, 2010) and applied in subsequent studies (e.g. Karttunen *et al.*, 2022).

SC Relational Performance. This construct is a second-order reflective construct comprising the relational performances of three dyads (Swierczek, 2024). The reflective approach highlights their interchangeable nature and synergistic effects, while recognizing that each dyad may impact overall supply chain performance differently. Relational performance was measured at the tie level, capturing mutual benefits in exchange relationships, and is based on the synergy construct from Kim and Choi (2015), validated by Swierczek (2023).

Control variables. We included three sets of control variables: firm size, country of origin, and industry type, all of which can influence supply chain relational performance (Li *et al.*, 2023; Zhou *et al.*, 2023; Bag *et al.*, 2024). Firm size and country of origin applied to all triad members, industry type to suppliers and their buyers, and LSP type (2PL, 3PL, 4PL) to service providers.

Control variables were categorical, while other indicators were measured on a six-point Likert scale to reduce midpoint bias (Trompenaars and Hampden-Turner, 1998) and enhance face validity (Saris and Gallhofer, 2007). The six-point scale also encourages deeper engagement and is suitable for opposing phenomena like exploitation/exploration (Kim and Choi, 2015; Chowdhury *et al.*, 2019).

3.3 Assessing the hypothesized models

We used Partial Least Squares SEM (PLS-SEM) to assess the models, as it suits our triadic context, complex model with second-order constructs, and formative measures better than CB-SEM (Ryan, 2020; Goktas and Dirsehan, 2025). PLS-SEM is also appropriate given the exploratory nature of our study. Analyses were conducted in SmartPLS 4 using a disjoint two-stage approach for higher-order constructs (Hair *et al.*, 2022). As the companies are nested within triads, observations may exhibit correlated error terms, violating the independence assumption. For this reason, the structural model developed in the second stage of the analysis included cluster-robust standard errors to obtain unbiased statistical inference (Wooldridge, 2010). The summary of the research methods used in the study is presented in Table 2.

As reported in Table 2, beyond the PLS-SEM analysis, a series of robustness checks were undertaken to ensure the validity and reliability of the results. Confirmatory composite analysis was employed to substantiate the use of formative measures for the construct of LSP-stimulated socialization, enabling more comprehensive theoretical model prediction and yielding the expected outcomes. FIMIX-PLS analysis was conducted to assess unobserved heterogeneity and reinforce the credibility of the findings. Finally, two-stage least squares regression was applied to test for potential model endogeneity, thereby enhancing predictive accuracy and strengthening causal explanations (Guenther *et al.*, 2023; Vaithilingam *et al.*, 2024; Wang *et al.*, 2024; Magno *et al.*, 2024).

4. Results

4.1 Confirmatory composite models

The “LSP-fostered socialization” construct is a formative composite of supplier and buyer socialization, whose indicators may be correlated (Henseler, 2017). We used Mode A correlation weights to estimate these components (Rigdon, 2016). In the first step, confirmatory composite analysis was performed to test the adequacy of the measurement structure – Table 3.

The analysis showed minimal discrepancies between empirical and model-implied covariances, indicating acceptable model fit and supporting our measures (Henseler, 2017). We also assessed the significance of indicator weights and loadings.

Table 2. Summary of research methods

Method	Description
Confirmatory composite analysis	Testing the adequacy of the formative structure of construct used to measure “socialization fostered by the LSP”
PLS-SEM path model analysis	
Measurement model	Testing the unidimensionality, reliability, and validity (discriminant and convergent validity) of theoretical constructs
PLS-SEM path model analysis structural model	Testing the hypothesized relationships between latent variables (constructs) and mediation
FIMIX-PLS analysis	Testing for unobserved heterogeneity
The two-stage least squares regression analysis (2SLS)	Testing for model endogeneity
Source(s): Author’s own work	

Table 3. Results of the CCA

Buyer exploitation/ supplier exploration model	Value	HI95	HI99
<i>Saturated model</i>			
SRMR	0.040	0.044	0.055
d _{ULS}	0.910	1.07	1.15
d _G	0.420	0.474	0.503
<i>Estimated model</i>			
SRMR	0.042	0.046	0.049
d _{ULS}	1.01	1.21	1.33
d _G	0.420	0.475	0.500

Buyer exploration/supplier exploitation model	Value	HI95	HI99
<i>Saturated model</i>			
SRMR	0.040	0.043	0.045
d _{ULS}	0.891	1.06	1.14
d _G	0.415	0.470	0.493
<i>Estimated model</i>			
SRMR	0.042	0.046	0.048
d _{ULS}	0.988	1.06	1.31
d _G	0.415	0.470	0.493

Note(s): SRMR: Standardized root mean squared residual. d_{ULS}: Unweighted least squares discrepancy. d_G: geodesic discrepancy. HI95: bootstrap-based 95% percentile. HI99: bootstrap-based 99% percentile

Source(s): Author's own work

As indicated in Table 4, the outer weight for supplier socialization is found to be significant (at $p < 0.001$) and greater than the cutoff point of 0.5 (Sarstedt et al., 2021), while the outer weight for buyer socialization is insignificant (at $p < 0.05$) and below the standard value of 0.5 in the buyer exploitation-supplier exploration model. However, since the indicator loading for this construct is over the threshold of 0.5 it can still be retained in the model. Moreover, the constructs of socialization of the supplier and the buyer are not interchangeable. Consequently, since removing the construct of buyer socialization might change the meaning of the higher-order construct and reduce its content validity (Hair et al., 2022), we decided to retain buyer socialization in the first model. Interestingly, the outer weight for supplier socialization is found to be significant (at $p < 0.05$) and slightly greater than the cutoff point of 0.5 (Sarstedt et al., 2021), while the outer weight for buyer socialization is significant (at $p < 0.01$) and above the standard value of 0.5 in the buyer exploration-supplier exploitation model. The VIF (Variance Inflation Factor) values for all first-order constructs in both models are below 3, which suggests that there is no multicollinearity issue.

4.2 Testing of common method variance

Composite measures are generally unaffected by common method variance (CMV) as they are considered error-free (Henseler, 2017). Still, we took steps to prevent and test for CMV: ensuring respondent confidentiality and anonymity, randomizing variable order (Podsakoff et al., 2003), and avoiding explicit labeling of questions. Since traditional methods like Harman's single-factor test are unsuitable for detecting CMV in composite SEM

Table 4. Formative higher-order construct validity

HOC	LOC	Outer weights	T-statistics	p-values	Outer loadings	T-statistics	p-values
<i>Buyer exploitation-supplier exploration model</i>							
SLSP							
	SS	0.875	6.95	0.000	0.984	28.56	0.000
	BS	0.208	1.12	0.260	0.665	5.000	0.000
<i>Buyer exploration-supplier exploitation model</i>							
SLSP							
	SS	0.547	2.43	0.015	0.859	6.63	0.000
	BS	0.600	2.85	0.004	0.884	8.55	0.000

Note(s): HOC – Higher-Order Construct

LOC – Lower-Order Construct

SLSP – Socialization Process fostered by LSP

SS – Supplier Socialization

BS – Buyer Socialization

Source(s): Author's own work

(Sabol *et al.*, 2023), we conducted a full collinearity assessment to identify collinearity in the measurement models (Kock and Lynn, 2012). The VIF values at the construct level range from 1.30 to 2.02 for the buyer exploitation/supplier exploration model, and from 1.37 to 1.97 for the buyer exploration/supplier exploitation model, remaining far below the threshold of 3.3 suggested by Kock and Lynn (2012). As the second method of detecting CMV, we used Lindell and Whitney's (2001) version of the marker-variables technique, recommended by Malhotra *et al.* (2006). We used a three-item construct of centralized IT solutions used by the LSP, composed of the following variables: information that has been generated by my organization is stored in a single registry, my organization can fully exercise control over the data that was created using its systems (either built or purchased), there is one single person in my organization (e.g. a database administrator) who grants access to data/records. The marker variable used in our study is theoretically unrelated to at least one key construct of the model (Malhotra *et al.*, 2006), and its items were embedded within the survey instrument.

Our tests show that the average correlation between the marker variable and main constructs is $r = -0.048$ (average p -value = 0.28) for the buyer exploitation/supplier exploration model, and $r = -0.051$ (average p -value = 0.26) for the buyer exploration/supplier exploitation model, indicating minimal common method bias. Using the smallest positive correlation between the marker variable and our theoretical constructs (0.088) as a proxy for common method variance (CMV), we computed the adjusted correlations according to Lindell and Whitney (2001). The adjustment did not change the significance of the correlations, indicating a minimum influence of CMV. In addition, inspection of the correlation matrix suggests that all correlation coefficients are far below the cutoff point of 0.9 (Pavlou *et al.*, 2007). The results thus suggest that our research models do not suffer from CMV.

In addition, we also tested for possible bias in the self-report survey to confirm that late respondents and non-respondents have similar tendencies, as recommended by Armstrong and Overton (1977). Each of the three groups of respondents fulfilling different roles in the triads (supplier, LSP, buyer) was divided into two groups in terms of the time of survey completion. The results of the t -test showed that there are no significant differences between the two waves of response groups regarding demographic variables and one randomly selected variable in each construct. This suggests that the study does not exhibit a problem of non-response bias.

4.3 Measurement models

The measurement models were developed to assess the unidimensionality, reliability, and validity (discriminant and convergent) of the theoretical constructs (Fornell and Larcker, 1981) - Table 5.

The PLS-SEM results indicate that the measurement model has a good fit, suggesting the unidimensionality of the scale items. The Cronbach α and composite reliability of all the theoretical constructs were well above the acceptable threshold of 0.70 (Hair *et al.*, 2022), which provides evidence of reliability. All the indicators in their respective constructs are statistically significant ($p < 0.001$) with factor loadings greater than 0.7, demonstrating convergence validity (Hair *et al.*, 2022). Similarly, all the average variance extracted (AVE) values were greater than the acceptable threshold of 0.50, which provides further evidence of convergent validity (Fornell and Larcker, 1981). Furthermore, the VIF statistics showed that multicollinearity in the indicators is not an issue as the VIF values are below the recommended threshold of 5 (Hair *et al.*, 2022). Additionally, the comparison of the squared correlation between two constructs and the AVE for each construct showed discriminant validity (Fornell and Larcker, 1981) for both models - Table 6.

Finally, as the maximum HTMT (Heterotrait-Monotrait Ratio of Correlations) values between any two constructs in both models are far below the recommended threshold of 0.9 (Hair *et al.*, 2024), we argue that the conditions for discriminant validity were fully met.

4.4 Structural Models and mediation

The explanatory power of both models is good with the coefficients of determination (R^2) for the endogenous constructs falling within the range of 0.275–0.356. The models also indicate a satisfactory predictive relevance, as the cross-validated redundancy indices (Q^2) for all endogenous constructs in both models are greater than zero, ranging from 0.028 to 0.249 (Hair *et al.*, 2022). Moreover, the SRMR (Standardized Root Mean Square Residual) values are below the threshold of 0.8 for both models, and the d_{ULS} and d_G discrepancy values are below the 95% and 99% quantiles of the bootstrap discrepancies. This suggests that our models should not be rejected. The f^2 values range from 0.561 to 0.388, indicating large effect sizes in both models - Table 7.

The structural model shows that all the postulated relationships between the constructs are significant (at $p < 0.001$). Specifically, the LSP is able to foster socialization with the buyer and the supplier within a triad, as it has a positive and significant effect on partitional buyer-supplier ambidexterity in both models ($\beta = 0.526$, Wald $\chi^2(1) = 115.97$, $p < 0.001$) for buyer exploitation and supplier exploration and ($\beta = 0.517$, Wald $\chi^2(1) = 114.12$, $p < 0.001$) for buyer exploration and supplier exploitation), thus supporting H1.

The analysis also demonstrates that partitional buyer-supplier ambidexterity has a significant positive effect on SC relational performance ($\beta = 0.585$, Wald $\chi^2(1) = 142.18$, $p < 0.001$ for buyer exploitation and supplier exploration and $\beta = 0.593$, Wald $\chi^2(1) = 154.00$, $p < 0.001$ for buyer exploration and supplier exploitation), providing support for H2. Regarding the control variables, only the type of LSP turned out to be significant with a positive effect on supply chain performance in both models, while the impact of the remaining contextual variables appeared to be insignificant.

To statistically test whether partitional buyer-supplier ambidexterity mediates the relationship between LSP-stimulated socialization and SC relational performance, we conducted a mediation analysis.

Both direct and indirect paths are significant and in the same direction, indicating that partitional buyer-supplier ambidexterity acts as a complementary mediator between LSP-fostered socialization and supply chain relational performance (Zhao *et al.*, 2010). It aligns with the proposed framework but is not the sole mediator.

Since the indirect effects are smaller than the total effects, partitional buyer-supplier ambidexterity functions as a suppressor (MacKinnon *et al.*, 2000). In our model, the positive

Table 5. Measurement model results: reliability and validity

Measures	Item	Buyer exploitation/Supplier exploitation model						Buyer exploration/Supplier exploitation model						α	CR	AVE
		Loading ^{***}	SE	<i>t</i> -statistics	VIF	α	CR	AVE	Loading ^{***}	SE	<i>t</i> -statistics	VIF				
<i>Supplier Socialization (SS)</i>						0.871	0.883	0.603						0.871	0.884	0.603
Logistics service provide supports and promotes . . .																
. . . Effectiveness of the communication guidelines in improving the understanding of both parties in the triad	SS1	0.777	0.023	33.91	1.862				0.78	0.023	33.694	1.862				
. . . Effectiveness of the awareness of both partners' issues in improving the understanding of both parties in the triad	SS2	0.798	0.022	36.115	1.955				0.798	0.022	35.799	1.955				
. . . Effectiveness of the on-site visits in improving the understanding of both parties in the triad	SS3	0.755	0.028	26.916	1.73				0.755	0.028	27.157	1.73				
. . . Effectiveness of the joint workshops in improving the understanding of both parties in the triad	SS4	0.761	0.028	27.702	2.065				0.759	0.028	27.058	2.065				
. . . Effectiveness of the cross-functional teams in developing relationships in the triad	SS5	0.789	0.027	29.129	3.053				0.787	0.028	28.411	3.053				
. . . Effectiveness of the matrix-style reporting structure in developing relationships in the triad	SS6	0.774	0.029	26.791	2.695				0.772	0.03	26.113	2.695				

(continued)

Table 5. Continued

Measures	Item	Buyer exploitation/Supplier exploitation model					Buyer exploration/Supplier exploitation model					α	CR	AVE	
		Loading**	SE	<i>t</i> -statistics	VIF	α	CR	AVE	Loading**	SE	<i>t</i> -statistics				VIF
<i>Buyer Socialization (BS)</i>						0.847	0.848	0.564					0.847	0.847	0.565
Logistics service provide supports and promotes . . .															
... Effectiveness of the communication guidelines in improving the understanding of both parties in the triad	BS1	0.726	0.027	26.645	1.584				0.718	0.028	25.359	1.584			
... Effectiveness of the awareness of both partners' issues in improving the understanding of both parties in the triad	BS2	0.712	0.029	24.898	1.601				0.704	0.029	24.416	1.601			
... Effectiveness of the on-site visits in improving the understanding of both parties in the triad	BS3	0.775	0.025	31.526	1.775				0.775	0.024	32.09	1.775			
... Effectiveness of the joint workshops in improving the understanding of both parties in the triad	BS4	0.750	0.03	24.998	1.936				0.754	0.029	26.166	1.936			
... Effectiveness of the cross-functional teams in developing relationships in the triad	BS5	0.765	0.032	24.143	2.64				0.771	0.03	25.628	2.64			
... Effectiveness of the matrix-style reporting structure in developing relationships in the triad	BS6	0.771	0.03	26.108	2.438				0.779	0.028	27.833	2.438			
(continued)															

(continued)

Table 5. Continued

Measures	Item	Buyer exploitation/Supplier exploration model							Buyer exploration/Supplier exploitation model						
		Loading ^{**}	SE	t-statistics	VIF	α	CR	AVE	Loading ^{**}	SE	t-statistics	VIF	α	CR	AVE
<i>Buyer Exploration (BExplr)</i>															
Proactive persuasion of new solutions in the triad	BExplr1								0.879	0.013	66.096	2.55	0.890	0.891	0.752
Continuous experiments to find new solutions to improve the triad	BExplr2								0.869	0.017	49.928	2.521			
Continuous exploration for new opportunities in the triad	BExplr3								0.867	0.018	47.417	2.349			
Constantly seeking novel approaches to solving problems in the triad	BExplr4								0.85	0.019	45.771	2.209			
<i>Supplier Exploitation (SExpl)</i>													0.902	0.903	0.772
Focus on reducing the operational redundancies in the existing processes to stay competitive	SExpl1								0.878	0.017	52.331	2.548			
Importance of the leveraging of technologies for the company's strategy	SExpl2								0.862	0.019	45.21	2.365			
Focus on improving the existing technologies to stay competitive	SExpl3								0.877	0.018	49.347	2.54			
Focus on developing stronger competencies in the existing processes in the triad	SExpl4								0.896	0.013	67.92	2.865			
<i>Buyer Exploitation (BExpl)</i>						0.868	0.871	0.717							

(continued)

Table 5. Continued

Measures	Item	Buyer exploitation/Supplier exploitation model				Buyer exploration/Supplier exploitation model				α	CR	AVE
		Loading**	SE	t-statistics	VIF	Loading**	SE	t-statistics	VIF			
Focus on reducing the operational redundancies in the existing processes to stay competitive	BExpl1	0.832	0.022	37.139	1.942							
Importance of the leveraging of technologies for the company's strategy	BExpl2	0.816	0.026	31.702	1.959							
Focus on improving the existing technologies to stay competitive	BExpl3	0.872	0.017	52.165	2.363							
Focus on developing stronger competencies in the existing processes in the triad	BExpl4	0.864	0.019	46.286	2.307							
<i>Supplier Exploration (SEplr)</i>						0.885	0.886	0.744				
Proactive persuasion of new solutions in the triad	SEplr1	0.862	0.019	46.187	2.334							
Continuous experiments to find new solutions to improve the triad	SEplr2	0.869	0.017	52.292	2.384							
Continuous exploration for new opportunities in the triad	SEplr3	0.878	0.016	55.918	2.518							
Constantly seeking novel approaches to solving problems in the triad	SEplr4	0.84	0.022	38.335	2.129							
Supplier-LSP Dyadic Performance (SLDP)						0.833	0.833	0.666		0.833	0.833	0.666

(continued)

Table 5. Continued

Measures	Item	Buyer exploitation/Supplier exploration model							Buyer exploration/Supplier exploitation model						
		Loading**	SE	t-statistics	VIF	α	CR	AVE	Loading**	SE	t-statistics	VIF	α	CR	AVE
Working with the partner has allowed to overcome some problems, and thus derive substantial benefits for the dyad	SLDP1	0.797	0.027	29.211	1.708				0.797	0.027	29.402	1.708			
My company and its partner in the dyad can accomplish a lot more by working together than by working independently	SLDP2	0.864	0.015	58.871	2.222				0.865	0.015	58.474	2.222			
Differing views in the dyad have often led to discovering better ways of solving problems	SLDP3	0.797	0.024	33.512	1.746				0.795	0.023	34.305	1.746			
My company and its partner in the dyad complement each other well in terms of capabilities	SLDP4	0.803	0.022	37.003	1.709				0.804	0.022	36.9	1.709			
Working with the partner in the dyad allowed my company to overcome some problems it could not solve alone	SLDP5	*							*						
Buyer-Supplier Dyadic Performance (BSDP)						0.838	0.838	0.673				0.838	0.839	0.673	
(continued)															

Table 5. Continued

Measures	Item	Buyer exploitation/Supplier exploration model							Buyer exploration/Supplier exploitation model								
		Loading**	SE	t-statistics	VIF	α	CR	AVE	Loading**	SE	t-statistics	VIF	α	CR	AVE		
Working with the partner has allowed to overcome some problems, and thus derive substantial benefits for the dyad	BSDP1	0.808	0.024	33.355	1.76				0.811	0.024	34.393	1.76					
My company and its partner in the dyad can accomplish a lot more by working together than by working independently	BSDP2	0.802	0.026	31.413	1.712				0.797	0.026	31.163	1.712					
Differing views in the dyad have often led to discovering better ways of solving problems	BSDP3	0.834	0.023	36.676	1.934				0.835	0.022	37.251	1.934					
My company and its partner in the dyad complement each other well in terms of capabilities	BSDP4	0.835	0.018	47.253	1.954				0.836	0.017	48.144	1.954					
Working with the partner in the dyad allowed my company to overcome some problems it could not solve alone	BSDP5	*							*								
<i>LSP-Buyer Dyadic Performance (LBDP)</i>						0.854	0.862	0.632							0.854	0.865	0.632
<i>(continued)</i>																	

Table 5. Continued

Measures	Item	Buyer exploitation/Supplier exploration model							Buyer exploration/Supplier exploitation model						
		Loading**	SE	t-statistics	VIF	α	CR	AVE	Loading**	SE	t-statistics	VIF	α	CR	AVE
Working with the partner has allowed to overcome some problems, and thus derive substantial benefits for the dyad	LBDP1	0.821	0.019	43.67	1.93				0.826	0.018	45.543	1.93			
My company and its partner in the dyad can accomplish a lot more by working together than by working independently	LBDP2	0.764	0.029	26.286	1.761				0.762	0.03	25.756	1.761			
Differing views in the dyad have often led to discovering better ways of solving problems	LBDP3	0.847	0.018	46.976	2.218				0.85	0.017	49.456	2.218			
My company and its partner in the dyad complement each other well in terms of capabilities	LBDP4	0.802	0.024	33.863	1.862				0.797	0.025	31.69	1.862			
Working with the partner in the dyad allowed my company to overcome some problems it could not solve alone	LBDP5	0.732	0.034	21.439	1.658				0.731	0.035	21.079	1.658			
Note(s): * Excluded items due to the low factor loadings; ** All loading values significant at $p < 0.001$															
Source(s): Author's own work															

Table 6. Discriminant validity – Fornell-Larcker Criterion

Buyer Exploitation/Supplier Exploration Model	SS	BS	BExpl	SExplr	SLDP	BSDP	LBDP
SS - supplier socialization	0.777						
BS - buyer socialization	0.521	0.751					
BExpl - buyer exploitation	0.147	0.435	0.847				
SExplr - supplier exploration	0.554	0.19	0.183	0.863			
SLDP - Supplier-LSP dyadic performance	0.553	0.343	0.114	0.516	0.816		
BSDP - buyer-supplier dyadic performance	0.366	0.353	0.377	0.511	0.491	0.821	
LBDP - LSP-Buyer dyadic performance	0.272	0.430	0.394	0.151	0.424	0.591	0.795

Buyer Exploration/Supplier Exploitation Model	SS	BS	BExplr	SExpl	SLDP	BSDP	LBDP
SS - Supplier Socialization	0.776						
BS - Buyer Socialization	0.520	0.752					
BExplr - Buyer Exploration	0.136	0.520	0.867				
SExpl - Supplier Exploitation	0.516	0.179	0.126	0.879			
SLDP - Supplier-LSP Dyadic Performance	0.554	0.340	0.159	0.524	0.816		
BSDP - Buyer-Supplier Dyadic Performance	0.366	0.352	0.368	0.492	0.491	0.821	
LBDP - LSP-Buyer Dyadic Performance	0.273	0.429	0.452	0.111	0.424	0.591	0.795

Source(s): Author's own work

effect of LSP-promoted socialization on supply chain relational performance is partially reduced because ambidexterity captures part of that impact. Socialization requires effort from the LSP, buyer, and supplier, which enhances dyadic ambidexterity and, in turn, improves overall relational performance. These results support [H3](#), showing partial mediation in both models.

4.5 Data heterogeneity and model endogeneity

Since both models consist of higher-order constructs, we assessed the latent groups in the items to reveal unobserved heterogeneity, as recommended by [Matthews et al. \(2016\)](#). First, to determine the maximum number of segments, we estimated the minimum sample size for each segment ([Sarstedt et al., 2017](#)). In line with the results of *post hoc* power analysis, a power level of 80% for an effect size of 0.15 suggests a minimum number of 85 triads in each segment. This allows for a maximum of 4 segments to be extracted, each containing an average of at least 87 triads. Following this, we employed FIMIX-PLS (Finite Mixture Partial Least Squares) repeatedly to determine the exact number of segments – [Table 8](#).

The fit indices for a one-to four-segment solution for both models showed an ambiguous picture, as AIC₃ (Akaike Information Criterion) and CAIC (Consistent Akaike Information Criterion) point to different segment numbers in both models. Moreover, AIC₄ and BIC (Bayesian Information Criterion) point to the same number of segments for the buyer exploitation/supplier exploration model, while both indices point to different segment numbers in the buyer exploration/supplier exploitation model. Finally, MDG₅ (Minimum Description Length/Minimum Discrepancy Criterion) points to different segment numbers. We therefore conclude that unobserved heterogeneity is not critical, and thus does not significantly affect the data, as the fit indices show divergent results ([Sarstedt et al., 2020](#)).

To test for endogeneity in our model, we applied the instrument variable approach using Two-Stage Least Squares regression analysis (2SLS) for both models of buyer exploitation/supplier exploration and buyer exploration/supplier exploitation – [Table 9](#).

Table 7. Structural models and mediation

	Effect	SE	<i>t</i>	<i>p</i>	Bias-corrected confidence interval	
					LLCI	ULCI
<i>Buyer exploitation/supplier exploration model</i>						
Hypothesized model						
SLSP – BSA	0.526	0.044	11.99	0.000	0.514	0.639
BSA – SCRP	0.585	0.037	15.76	0.000	0.440	0.588
<i>R</i> ² / <i>adj. R</i> ²						
BSA	0.277/0.275					
SCRP	0.343/0.341					
<i>Overall fit of the estimated model</i>			Value	HI ₉₅	HI ₉₉	
SRMR			0.072	0.082	0.087	
d _{ULS}			0.146	0.186	0.210	
d _G			0.083	0.089	0.093	
<i>Effect size (f²)</i>						
SLSP – BSA	0.541					
BSA – SCRP	0.408					
<i>Initial/Mediated models *</i>						
Supply chain relational performance model						
Initial model						
SLSP – SCRP	0.554	0.039	14.294	0.000	0.486	0.613
Mediated model						
<i>Direct effect</i>						
SLSP – SCRP	0.399	0.046	8.644	0.000	0.319	0.470
<i>Indirect effect</i>						
SLSP – BSA – SCRP	0.207	0.030	6.915	0.000	0.156	0.254
<i>Buyer exploration/supplier exploitation model</i>						
Hypothesized model						
SLSP – BSA	0.517	0.043	11.984	0.000	0.420	0.591
BSA – SCRP	0.593	0.040	16.087	0.000	0.510	0.657
<i>R</i> ² / <i>adj. R</i> ²						
BSA	0.277/0.275					
SCRP	0.356/0.355					
<i>Overall fit of the estimated model</i>			Value	HI ₉₅	HI ₉₉	
SRMR			0.068	0.080	0.086	
d _{ULS}			0.132	0.179	0.209	
d _G			0.087	0.093	0.097	
<i>Effect size (f²)</i>						
SLSP – BSA	0.561					
BSA – SCRP	0.388					
<i>Initial/Mediated models *</i>						
Supply chain relational performance model						
Initial model						
SLSP – SCRP	0.554	0.039	14.306	0.000	0.472	0.625
Mediated model						
<i>Direct effect</i>						
SLSP – SCRP	0.332	0.045	7.454	0.000	0.246	0.421
<i>Indirect effect</i>						
SLSP – BSA – SCRP	0.215	0.029	7.296	0.000	0.158	0.272
Note(s): **SLSP – Socialization practices fostered by the LSP, BSA – Buyer-supplier ambidexterity, SCRP – SC relational performance						
SRMR: Standardized root mean squared residual, d _{ULS} : Unweighted least squares discrepancy, d _G : geodesic discrepancy, HI95: bootstrap-based 95% percentile, HI99: bootstrap-based 99% percentile						
Source(s): Author's own work						

Table 8. The fit indices for a one-to four-segment solution for both models

Segments	Buyer exploitation/Supplier exploration model				Buyer exploration/Supplier exploitation model			
	1	2	3	4	1	2	3	4
AIC3	5217.819	5125.096	5116.323	5072.978	5177.282	5118.433	5110.775	5113.695
AIC4	5246.819	5184.096	5205.323	5191.978	5206.282	5177.433	5199.775	5232.695
BIC	5300.699	5293.714	5370.679	5413.072	5260.162	5287.051	5365.131	5453.789
CAIC	5329.699	5352.714	5459.679	5532.072	5289.162	5346.051	5454.131	5572.789
MDL5	5980.219	6676.186	7456.104	8201.448	5939.682	6669.523	7450.556	8242.165
EN	0	0.527	0.572	0.664	0	0.496	0.539	0.658

Note(s): The minimum values for each index are highlighted in italic

Source(s): Author’s own work

First, several instrument variables (IVs) were identified to meet the criteria of instrument relevance and exclusion restriction. Two IVs were selected for socialization practices, namely, “The employees of the LSP frequently visit both partners’ places of business” and “The LSP spends time getting to know people in both partner companies” in Model 1. Drawing upon the theory, it can be seen that they are correlated with socialization ([Badrinarayanan and Arnett, 2008](#); [Gould et al., 2016](#)) but do not directly affect the dependent variable. Another set of two IVs was then selected for partitional buyer-supplier ambidexterity (i.e. “The LSP and its partners in the triad have formal written agreements outlining warranty policies” and “The LSP and its partners have formal written agreements that detail the obligations and rights of the parties in the triad”) in Model 2. These two IVs are correlated with ambidexterity ([Zhang et al., 2020](#)) but do not directly influence SC relational performance.

Using STATA 18.5, in the first stage of the 2SLS test, the constructs of socialization practices fostered by the LSP and partitional buyer-supplier ambidexterity were regressed on IVs as shown in Model 1a and Model 2a, respectively. The correlation turned out to be statistically significant for both buyer exploitation/supplier exploration and buyer exploration/supplier exploitation. Subsequently, the predicted value for the assumed endogenous construct of socialization practices fostered by the LSP was calculated based on Model 1a to evaluate the relationships between partitional buyer-supplier ambidexterity and SC relational performance (Models 1b and 1c). Then, using the stage-1 predicted values, the effect of partitional buyer-supplier ambidexterity on SC relational performance was examined in the second stage (Model 2b). The results of the 2SLS test in the second stage suggest that all the relationships remain positive and significant at least at $p < 0.05$. The results of the Durbin-Wu-Hausman endogeneity test failed to reject the exogenous structure of both socialization practices and partitional buyer-supplier ambidexterity – all $F(1,347)$ statistics were insignificant at the level of $p > 0.05$, suggesting an insignificant difference between the instrumented and non-instrumented models. Thus, the endogeneity of the constructs of socialization practices fostered by the LSP and partitional buyer-supplier ambidexterity does not appear to be a significant concern for either model of buyer exploitation/supplier exploration or buyer exploration/supplier exploitation.

5. Discussion

5.1 Theoretical contribution

The study provides several novel perspectives that enhance our understanding of theory. First, it advances research by demonstrating that LSPs can actively drive partitional buyer-supplier ambidexterity, thus supporting supply chains in developing exploration and exploitation. This study introduces an institutional perspective into the ongoing discourse on spatial separation, moving beyond the conventional view that effective ambidexterity depends primarily on senior management coordination via a shared vision and strategic intent ([O’Reilly and](#)

Table 9. Robustness analysis: 2SLS results

	Model 1a: SLSP (OLS)	Model 1b: BSA (2SLS)	Model 1c: SCRP (2SLS)	Model 2a: BSA (OLS)	Model 2b: SCRP (2SLS)
Buyer Exploitation/Supplier Exploration Model					
<i>Instrumental variables</i>					
The employees of LSP frequently visit both partners' places of business	0.088 (0.037)*				
LSP spends time getting to know people in both partners' companies	0.155 (0.036)***				
SLSP (<i>instrumented</i>)		0.289 (0.136)*	0.436 (0.131)***		
R ²	0.120	0.221	0.270		
Durbin-Wu-Hausman test		F(1,347) = 3.70712 (p = 0.0550)	F(1,347) = 0.546664 (p = 0.4602)		
<i>Instrumental variables</i>					
LSP and its partners in the triad have formal written agreements outlining warranty policies				-0.181 (0.047)***	
LSP and its partners have formal written agreements that detail the obligations and rights of parties in the triad				0.165 (0.042)***	
BSA (<i>instrumented</i>)					0.825 (0.203)***
R ²				0.049	0.285
Durbin-Wu-Hausman test					F(1,347) = 1.58806 (p = 0.2085)
Buyer Exploration/Supplier Exploitation Model					
<i>Instrumental variables</i>					
The employees of LSP frequently visit both partners' places of business	0.078 (0.036)*				

(continued)

Table 9. Continued

	Model 1a: SLSP (OLS)	Model 1b: BSA (2SLS)	Model 1c: SCRП (2SLS)	Model 2a: BSA (OLS)	Model 2b: SCRП (2SLS)
LSP spends time getting to know people in both partners' companies SLSP (<i>instrumented</i>)	0.183 (0.036)***	0.306 (0.125)*	0.399 (0.121)***		
R^2	0.142	0.142	0.272		
Durbin-Wu-Hausman test		$F(1,347) = 3.4781$ ($p = 0.0630$)	$F(1,347) = 1.63456$ ($p = 0.2019$)		
<i>Instrumental variables</i>					
LSP and its partners in the triad have formal written agreements outlining warranty policies				−0.197 (0.047)***	
LSP and its partners have formal written agreements that detail the obligations and rights of parties in the triad				0.159 (0.042)***	
BSA (<i>instrumented</i>)					0.746 (0.190)***
R^2				0.053	0.328
Durbin-Wu-Hausman test					$F(1,347) = 0.701044$ ($p = 0.4030$)
Note(s): SLSP – Socialization practices fostered by the LSP, BSA – Buyer-supplier ambidexterity, SCRП – SC relational performance					
Source(s): Author's own work					

Tushman, 2004; Smith and Tushman, 2005; Lubatkin *et al.*, 2006; Jansen *et al.*, 2008). Our findings demonstrate that such coordinating mechanisms may be institutionally embedded within a logistics service provider. In this role, the LSP exemplifies “the third that joins” (Pathak *et al.*, 2014), acting as an institutionalized locus of integration across spatially separated activities within buyer-supplier partitional ambidexterity. This underscores the institutional perspective through which ambidextrous structures are enacted, extending the literature beyond the traditional functional focus on coordination. Our research also complements the study by Prataviera *et al.* (2023), who noted that LSPs retain a certain degree of ambidexterity. Specifically, they can exploit large volumes and asset availability to increase efficiency when they concentrate on exploitation, and they are able to improve logistics flexibility when they focus on exploration. This ambidextrous nature of LSPs (Wei *et al.*, 2021; Herold *et al.*, 2025) can encourage partitional buyer-supplier ambidexterity.

Our research also advances and empirically validates the concept of partitional ambidexterity, which can be, to some extent, enhanced by socialization incentivized by LSPs. We identified two quantitative models of buyer-supplier partitional ambidexterity: buyer exploitation/supplier exploration (model 1) and buyer exploration/supplier exploitation (model 2), thereby extending previous conceptual and qualitative research (Simsek, 2009; Aoki and Wilhelm, 2017). Nonetheless, since socialization strengthens relationships, our findings challenge previous social capital research, which suggests that exploration depends on weak ties while exploitation relies on strong ties. Considering prior studies, exploration requires flexibility and access to diverse knowledge sources, rendering strong ties less appropriate, while exploitation prioritizes long-term collaboration with further existing technologies, favoring strong ties (Rowley *et al.*, 2000; Dittrich and Duysters, 2007; Harryson *et al.*, 2008).

Our findings show that partitional ambidexterity, combining buyer exploration and supplier exploitation (model 2), is strengthened by LSP-stimulated socialization. Contrary to the conventional view, the results demonstrate that both buyer exploitation and supplier exploration require strong ties as they are enhanced by socialization mechanisms. To discuss our findings, we specifically turn to the qualitative study of Gilsing and Nootboom (2005), which highlighted that stronger ties can not only support exploitation but also exploration. More specifically, exploration might require ties that are weak in control but strong in terms of scope, frequency of interaction, and bonding for personal trust. Trust is needed, next to reputation mechanisms, due to the limited feasibility of contractual control and the lack of hierarchy. Mutual understanding requires sufficient duration to make the exploration practices feasible and worthwhile (Nootboom and Gilsing, 2005). Similarly, Rowley *et al.* (2000) emphasized that, since strong ties are not inherently detrimental to exploration, their effects depend on the characteristics of specific populations and contextual factors. Our findings add to this understanding, suggesting that in a triadic context, specifically when partitional buyer-supplier ambidexterity is considered, socialization and strong ties may positively influence buyer exploration, as shown in model 2.

When it comes to model 1, the obtained results appear to contradict prior research as they demonstrate that the LSP does not need to promote socialization to support buyer exploitation, but it still supports the supplier in its exploration efforts. It is worth noting that suppliers' exploration and exploitation practices in both models require LSP-promoted socialization. This may stem from the fact that LSPs are typically engaged by suppliers rather than buyers (Wynstra *et al.*, 2015; Kim and Choi, 2021; Choi, 2023), leading to stronger social bonds between LSPs and suppliers within triadic relationships. Moreover, before a buyer engages in exploration with a specific supplier, it can often be necessary to first build trust and foster a commitment to innovation, problem-solving, and experimentation, as shown in model 2. In contrast, for exploitation, the buyer can establish strong ties with the supplier independently and with minimal risk, because, as noted by Partanen *et al.* (2020) and Tiwana (2008), the focus is on improving existing processes, leveraging current knowledge, and enhancing

internal efficiency. In such cases, the LSP, as an independent and impartial observer, is no longer required.

The study demonstrates that buyer-supplier partitional ambidexterity can ultimately lead to stronger SC relational performance. Building on [Swierczek \(2025\)](#), we introduced a more straightforward method for assessing the existence of SC relational performance. To do so, we have developed a higher-order construct that captures relational performance in dyads. This new construct allows us to effectively evaluate the significance and impact of SC relational performance on overall performance. Importantly, both measurement approaches corroborate the existence of relational performance. However, it is worth noting that, despite its simplicity due to a high level of aggregation, the measure of relational performance proposed in this study does not capture the specific effects of individual dyadic performances on overall supply chain performance. Our results suggest a uniformly positive – without differentiation – impact of dyadic performances on the higher-order construct formed by the relational performances of three dyads and their constituents. This is a significant finding, as prior studies have shown that not every dyad or individual company contributes equally to relational performance ([Swierczek, 2025](#)). For example, in some cases, a specific company within a dyad (e.g. vendor) may exhibit a nonsignificant relationship between ambidexterity and relational performance, as demonstrated by [Im and Rai \(2008\)](#).

The results indicate that partitional buyer-supplier ambidexterity serves as a partial mediator between socialization and SC relational performance. Notably, while socialization initiated by the LSP with the buyer is not crucial for developing partitional ambidexterity in model 1, it becomes of significant importance for SC relational performance. Specifically, when a direct link between LSP-stimulated socialization and SC relational performance is included, the formative relationship highlighting LSP socialization (which is fostered by buyer interactions with the LSP) becomes significant and positive. This finding supports research by [Pathak et al. \(2014\)](#) by emphasizing that the buyer and supplier socialization, facilitated by the LSP, is essential for achieving relational performance.

The analysis of the mediating effects also complements the study of [Choi \(2023\)](#) by illustrating how a triad initially characterized by an unbalanced state can transition toward a balanced state ([Choi, 2023](#)). In the unbalanced state, the triad exhibits only two positive relationships, namely, the voice-based ties grounded in trust and commitment that are fostered by the LSP with both the buyer and the supplier. The third relationship (buyer-supplier) may remain either absent or negative ([Choi and Wu, 2009](#)), reflecting distrust and perceptions of inequity. Such an unbalanced configuration can generate and amplify internal tensions unless these tensions are translated into alignment between exploitation and exploration through buyer-supplier partitional ambidexterity ([Gibson and Birkinshaw, 2004](#)). Accordingly, by incorporating the mediating role of buyer-supplier partitional ambidexterity, the triad is enabled to evolve toward a balanced state, in which exploration and exploitation are aligned between the buyer and supplier, thereby restoring relational equilibrium.

5.2 Managerial implications

Our study offers several managerial insights for business executives. First, it highlights the increasingly significant role that LSPs play in fostering strong relationships among supply chain partners and creating a more dynamic environment that supports social interaction and networking. Importantly, promoting socialization is another way LSPs can enhance supply chain relationships and develop a more advanced social community in a triad where trust and commitment are embedded.

Establishing a social community is especially crucial when the relationship between the buyer and supplier is strained, which can lead to conflicts. In such situations, an impartial third party, like the LSP, can act as a mediator, helping to alleviate tension between the buyer and supplier. The LSP effectively takes on a bridging role, connecting the two parties and encouraging socialization. However, this bridging role may not be permanent, as the

relationships within the triad can evolve and mature over time. As socialization occurs, the tension between the buyer and supplier may decrease, potentially allowing LSP to transition its bridging role to one of the two other companies involved.

Given their increasing significance, LSPs, in general, should be prepared to take on greater responsibility within supply chains. They become accountable for the successful operation of the entire supply chain, which includes fostering collaboration between buyers and suppliers. We argue that the ability of LSPs to enhance social interactions with both buyers and suppliers is influenced by the complexity of the service they offer to potential partners. As its complexity increases, LSPs are more engaged and better able to strengthen relationships with buyers and suppliers within supply chains.

From a managerial perspective, LSPs should develop enhanced service capabilities, particularly in the areas of organizational leadership, coordination across heterogeneous structures, proactive intervention in response to emerging challenges, and the reconciliation of inherent tensions between exploration and exploitation. As their role grows, the decisions made by LSPs will have far-reaching consequences, and therefore, they must be made thoughtfully and carefully. This suggests that major supply chain players (i.e. buyers and suppliers) should no longer view LSPs merely as contractors providing limited logistics services. Instead, LSPs can act as orchestrators – acquiring assets, creating synergies, and fostering social relationships. These issues align with network theory, which demonstrates that LSPs can enhance both the short-term refinement and long-term development of buyer-supplier partitional ambidexterity.

Although the LSP may create a favorable environment that positively affects buyer-supplier partitional ambidexterity, it is the buyer and supplier's role to initiate and maintain it. The LSP merely energizes relationships; the connected companies must engage in distinct explorative and exploitative actions themselves to truly add value to their performance. Understandably, the LSP will not undertake these actions for them. For example, socialization can foster conditions that enhance exploration by promoting creativity, encouraging bottom-up initiatives, and supporting decentralization, emergence, and self-organization. Developing such an environment can lead to new ideas, fresh initiatives, and innovative concepts, which can mitigate opportunism and self-interest, ultimately resulting in improved performance. At the end of the day, it is the buyer and supplier that must cultivate these skills themselves, even when the LSP provides favorable conditions.

From a managerial standpoint, the advantages of organizational ambidexterity have been extensively documented in practice across diverse industries, exemplified by firms such as BMW in the automotive sector and Apple in the technology sector. While simultaneously pursuing exploration and exploitation can provide substantial advantages for resource-rich large companies, it often presents significant challenges for SMEs, which typically face limited resources, constrained capabilities, and potential managerial conflicts. As a result, SMEs must strategically decide whether to emphasize exploration or exploitation and align their collaboration portfolios accordingly. Moreover, larger supply chain partners may be reluctant to invest time and resources in relationships with smaller firms. For SMEs, achieving ambidexterity is therefore most feasible through partnerships with similarly sized companies, and the involvement of the LSP can facilitate the process, guiding both parties (e.g. buyer and supplier) toward effective and mutually beneficial collaboration.

Interestingly, the analysis of the mediating effect of partitional buyer-supplier ambidexterity suggests that the social norms developed by the LSP enhance information sharing and make cooperation effective, efficient, and flexible. This, in turn, has a positive impact on SC relational performance. Nevertheless, with partial mediation, the socialization of the buyer and supplier, fostered by the LSP, also has indirect effects on SC relational performance. This means that the socialization efforts made by the LSP create a favorable environment for the implementation of certain managerial concepts (e.g. ambidexterity), enhancing SC relational performance.

Notably, LSP-stimulated socialization with both the buyer and the supplier directly enhances SC relational performance. At the same time, buyer-supplier partitional ambidexterity further strengthens relational performance, although it does not fully substitute for the direct effects of social mechanisms. The presence of partial mediation indicates that, to generate SC relational performance, social mechanisms within the two dyads (supplier-LSP and LSP-buyer) must be complemented by buyer-supplier partitional ambidexterity. This finding suggests that relational performance is most effectively produced through the joint involvement of all three dyads constituting the triad.

6. Limitations and further research

This study has some limitations that suggest avenues for future research. Partitional ambidexterity in supply chains is a new concept and may require distinct measures beyond the established ambidexterity scales used here. Additionally, our static model provides only a snapshot; a temporal perspective would help capture the dynamic interdependence of partitional buyer-supplier ambidexterity. Buyer-supplier partitional ambidexterity is a dynamic construct that evolves rather than being fixed.

Another limitation is the non-randomized sample, which may limit the generalizability of our findings – a common challenge when studying triads. Future research could replicate the study with triads from different industries and regions to enhance representativeness. Incorporating cultural factors and social norms as control variables could also provide a deeper understanding and further validate the results.

As LSPs gain power in supply chains, future research could examine whether they exploit their position at the expense of buyers and suppliers, including the risks of opportunistic behavior, conflicts, and manipulation for their own benefit. Another research avenue is to study how dyadic relational performance is distributed among triad members, as it is rarely equal, and how increased mutual benefits affect each actor's performance (Carter *et al.*, 2017).

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Further reading

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