

NETWORK LEARNING AND INTERORGANIZATIONAL LEARNING: A MULTILEVEL ANALYSIS OF SUBPROCESSES AND COORDINATION MECHANISMS

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Introdução

This research distinguishes Interorganizational Learning (IOL) from Network Learning (NL), a crucial distinction for sustainability. While IOL is an individual organization's learning through interaction, NL is the network's collective learning—a frequently conflated and empirically underexplored concept. Following Watanabe-Wilbert et al. (2022), this study applies a multilevel perspective to recent literature (2022-2025) to analyze their distinct subprocesses and interrelationships, thereby advancing the theoretical framework.

Problema de Pesquisa e Objetivo

In the face of global sustainability challenges, this research addresses the conceptual confusion between Interorganizational Learning (IOL) and Network Learning (NL), which are crucial mechanisms for educating a system of actors towards more responsible practices. Noting the scarcity of empirical studies on NL, the objective is to advance the theoretical framework that distinguishes the two constructs by analyzing their subprocesses and interrelationships from a multilevel perspective to better understand organizational learning for sustainability.

Fundamentação Teórica

The theoretical foundation is grounded in disciplines like complexity theory and constructivism, which posit that knowledge is socially constructed—a key principle for sustainability education. It distinguishes Interorganizational Learning (IOL), which focuses on an individual firm's absorptive capacity, from Network Learning (NL), a higher-order phenomenon that transforms the network to build collective competencies for sustainable practices. The 4I framework is used to analyze how learning flows across levels, enabling a system of actors to adopt more responsible behaviors.

Metodologia

To understand learning mechanisms for sustainability and the education of actors towards responsible practices, this research employs an integrative literature review. The study analyzed articles published between 2022 and 2026 from Scopus and Web of Science databases. The selection, guided by the PICOC protocol, resulted in 33 articles on Interorganizational Learning (IOL) and 22 on Network Learning (NL) for analysis. Qualitative content analysis used a seven-code system from multilevel learning theory, focusing on contexts, including education.

Análise e Discussão dos Resultados

The analysis reveals how network learning (NL) functions in the education of a system of actors for sustainability. The process is not a mere accumulation but the synchronization of the learning of individual organizations (IOL). For the network to develop a collective sustainable capability, essential subprocesses include the creation of shared meaning, joint commitment to common goals, and specific methods that standardize responsible practices. Power dynamics can distort these learning outcomes.

Considerações Finais

The research advances the understanding of how network learning (NL) creates a collective capability for sustainability, distinguishing it from individual learning (IOL). In practice, it offers a guide for managers and policymakers on how to design interventions and governance that effectively educate the network to address complex challenges. As a recommendation, it points to the need for future research to investigate how different learning patterns directly impact the network's sustainability outcomes.

Referências

The central references include the works of Knight (2002) and Knight & Pye (2005), which established the distinction between Interorganizational Learning (IOL) and Network Learning (NL). The analysis uses the 4I framework from Crossan, Lane, and White (1999), which was expanded by Jones and Macpherson (2006) for interorganizational dynamics. The concept of absorptive capacity from Cohen and Levinthal (1990) is fundamental to IOL. The research methodology follows the model of Watanabe-Wilbert, Steil, and Dandolini (2022).

Palavras Chave

Sustainability, Interorganizational Learning, Network Learning

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1 INTRODUCTION

Organizational learning has evolved significantly as a field of study, particularly when examined through the lens of interorganizational relationships. The contemporary business environment, characterized by increasing complexity and interconnectedness, especially in the face of global sustainability challenges, demands a deeper understanding of how learning occurs not just within organizational boundaries but across networks of collaborating entities. This research addresses a critical distinction in the literature: the difference between Interorganizational Learning (IOL) and Network Learning (NL) as fundamental mechanisms for promoting sustainability and the education of a system of actors towards more responsible practices. While often used interchangeably, these constructs represent fundamentally different phenomena with distinct implications for theory and practice.

The conceptual foundation for this distinction was established in seminal works by Knight (2002) and Knight and Pye (2005), who argued that IOL focuses on learning by individual organizations through their interactions with others, whereas NL represents learning by the network as a collective entity. Despite this theoretical advancement, empirical research specifically addressing NL remains limited, with most studies continuing to concentrate on bilateral learning relationships rather than network-level phenomena. This gap is particularly relevant given the proliferation of strategic alliances, innovation ecosystems, and collaborative networks in various sectors.

This study aims to advance the theoretical framework distinguishing IOL from NL by applying a multilevel learning perspective and examining recent literature published between 2022 and 2025. The research builds upon the methodological approach developed by Watanabe-Wilbert, Steil, and Dandolini (2022), extending their integrative review to incorporate the latest developments in the field. The primary objective is to analyze the specific subprocesses that characterize both IOL and NL, examining their distinctions, interrelationships, and temporal sequencing through a multilevel analytical framework.

2 THEORETICAL FOUNDATION

The theoretical underpinnings of network learning draw from multiple disciplines, including complexity theory, constructivist epistemology, and social network theory. The constructivist perspective, particularly as developed by Nonaka and Takeuchi (1995) and Tsoukas (2009), emphasizes that organizational knowledge is not merely transferred but socially constructed through interactions between organizations. This view positions interorganizational networks as intersubjective spaces where learning emerges from collaborative practices, shared narratives, and processes of reciprocal legitimation (Wenger, 1998).

Interorganizational Learning operates through mechanisms primarily focused on knowledge absorption and adaptation at the organizational level. The concept of absorptive capacity, introduced by Cohen and Levinthal (1990), remains central to understanding IOL, as it determines an organization's ability to recognize, assimilate, and apply external knowledge. The quality of interorganizational ties—including their strength, duration, and levels of trust

and reciprocity—significantly influences the effectiveness of IOL processes (Lane, Koka, & Pathak, 2006). These relational aspects create the foundation through which organizations access and internalize knowledge from their external environment.

In contrast, Network Learning requires more complex mechanisms of collective cognition and institutional alignment. NL depends on the development of network-level capabilities, including the construction of shared identity, establishment of common meaning systems, and development of institutionalized trust (Provan & Kenis, 2008). These elements not only support collective learning but also shape governance structures and communication flows within the network. The distinction becomes apparent when considering that while IOL enhances individual organizational capabilities, NL transforms the network itself, creating new collective competencies that cannot be reduced to the sum of individual organizational learnings.

The multilevel nature of learning processes is effectively captured by the 4I framework developed by Crossan, Lane, and White (1999), which articulates learning through four interconnected subprocesses: intuition, interpretation, integration, and institutionalization. This framework provides a valuable lens for understanding how learning flows across different organizational levels. Jones and Macpherson (2006) expanded this model to incorporate interorganizational dynamics, recognizing that learning processes extend beyond organizational boundaries. Their work supports the conceptualization of network-level learning as a distinct phenomenon emerging from, yet transcending, individual organizational learning.

The theoretical framework guiding this research posits that NL represents a higher-order learning phenomenon that emerges when multiple organizations achieve synchronized learning processes. This perspective aligns with complex adaptive systems theory, which views networks as systems capable of self-organization and emergent behavior. The transformation from IOL to NL requires specific coordination mechanisms and governance structures that enable the alignment of individual organizational learning trajectories toward collective outcomes.

3 METHODOLOGY

This research employs an integrative literature review methodology, following the systematic approach established by Watanabe-Wilbert et al. (2022). The methodological design was guided by the PICOC protocol (Population, Intervention, Comparison, Outcomes, Context), which ensured rigorous and transparent selection criteria. The review focused on scientific articles published between 2022 and 2026, providing an up-to-date analysis of contemporary research trends and findings.

The population for this review consisted of peer-reviewed articles addressing IOL and NL concepts, drawn from two major databases: Scopus and Web of Science. These platforms were selected for their comprehensive coverage of high-quality research in management and organizational studies. The search strategy employed structured queries using specific descriptors for each construct. For IOL, the search terms included "interorganizational learning" and "inter-organizational learning," while for NL, the primary term was "network learning." The search was limited to articles published in English and classified within relevant subject areas including business, management, multidisciplinary sciences, and decision sciences.

The intervention aspect of the PICOC framework focused on studies examining organizational learning processes in interorganizational contexts. The comparison was structured around the theoretical framework developed by Watanabe-Wilbert et al. (2022), which provides a foundation for analyzing the relationship between IOL and NL. The outcomes

of interest included theoretical models, empirical findings, and methodological approaches that illuminate the distinct characteristics of IOL and NL processes.

The selection process involved multiple stages of screening and evaluation. Initially, 66 articles were identified from Scopus and 44 from Web of Science for IOL, while NL searches yielded 141 and 82 articles respectively. After removing duplicates and applying inclusion criteria focused on relevance and methodological quality, 33 articles on IOL and 22 on NL were selected for in-depth analysis. A quality assessment matrix was developed to evaluate each article's contribution, with weighting factors assigned based on the completeness and rigor of their theoretical and empirical content.

The analytical approach employed a coding system derived from multilevel learning theory. Seven primary codes were developed: EXT-ORG (organizational extension), EXT-NET (network extension), INT-ORG (organizational internalization), INT-NET (network internalization), SH-MEAN (shared meaning), JO-CMIT (joint commitment), and SP-MTHD (specific methods). These codes enabled systematic categorization of learning processes across different levels of analysis. The coding process was iterative, with constant comparison between codes and theoretical concepts to ensure analytical rigor.

The analytical framework incorporated principles of qualitative content analysis, focusing on both manifest and latent content in the selected articles. This approach allowed for the identification of patterns, relationships, and contradictions in the literature, facilitating the development of a refined theoretical model. The analysis paid particular attention to empirical studies that provided evidence of learning processes in various network contexts, including healthcare, education, supply chains, and innovation ecosystems.

4 ANALYSIS AND DISCUSSION OF RESULTS

The analysis of recent literature provides substantial evidence supporting the conceptual distinction between IOL and NL while illuminating the processes through which they interrelate. The findings demonstrate that NL emerges through the synchronization of multiple IOL processes, rather than representing a simple accumulation of individual organizational learnings. This synchronization requires specific conditions and mechanisms that enable the transformation of individual learning into collective capability.

The extension phase (feed-forward) constitutes a critical foundation for both IOL and NL processes. EXT-ORG, representing knowledge dissemination within organizations, typically occurs through formal mechanisms such as training programs, internal communications, and structured learning routines. This process is particularly evident in organizations with well-developed knowledge management systems and hierarchical structures that facilitate the conversion of tacit knowledge into explicit organizational routines. In contrast, EXT-NET involves knowledge flows across organizational boundaries, often facilitated by intermediary actors, collaborative platforms, and network governance structures. The analysis reveals that networks characterized by high connectivity density and distributed leadership tend to exhibit more robust EXT-NET processes.

The internalization phase demonstrates even more striking differences between organizational and network levels. INT-ORG involves the incorporation of external knowledge into organizational routines, practices, and capabilities. This process depends heavily on absorptive capacity and is influenced by factors such as organizational culture, leadership support, and resource allocation. INT-NET, however, represents a more complex phenomenon involving the institutionalization of knowledge at the network level. This manifests through the development of shared standards, common protocols, and collective routines that transcend individual organizational boundaries.

Three critical subprocesses emerge as essential for the transition from IOL to NL: shared meaning (SH-MEAN), joint commitment (JO-CMIT), and specific methods (SP-MTHD). SH-MEAN develops through processes of sense-making and dialogue that create common conceptual frameworks among network members. This subprocess is particularly evident in networks that establish regular forums for discussion, shared documentation practices, and common measurement systems. JO-CMIT reflects the institutionalization of mutual obligations and shared responsibility, often embodied in formal agreements, governance structures, and joint investment decisions. SP-MTHD involves the development and adoption of standardized tools, processes, and evaluation mechanisms that enable coordinated action across the network.

The relationship between these subprocesses appears to be recursive rather than linear. While EXT-NET often precedes the development of SH-MEAN, the relationship is mutually reinforcing. Similarly, JO-CMIT both enables and is strengthened by the development of SP-MTHD. This complexity underscores the emergent nature of NL as a phenomenon that cannot be reduced to simple cause-effect relationships.

The analysis also reveals significant variations in how these processes manifest across different network types and contexts. In innovation ecosystems, for example, EXT-NET processes are often highly decentralized and organic, while in supply chain networks they may be more structured and hierarchical. These contextual factors influence both the pace and pattern of NL development, suggesting the need for contingent rather than universal models.

A critical finding concerns the role of power dynamics and resource asymmetries in shaping NL processes. Networks characterized by significant power imbalances tend to develop distorted learning processes, where the interests and knowledge frameworks of dominant members disproportionately influence collective learning outcomes. This highlights the importance of governance mechanisms that ensure equitable participation and knowledge integration.

CONCLUSION

This research makes several significant contributions to the understanding of learning in interorganizational contexts. Theoretically, it provides robust empirical support for the distinction between IOL and NL, clarifying their unique characteristics and interrelationships. The identification of seven specific subprocesses (EXT-ORG, EXT-NET, INT-ORG, INT-NET, SH-MEAN, JO-CMIT, SP-MTHD) offers a more granular understanding of how learning operates across different levels, addressing a significant gap in the existing literature.

The multilevel perspective developed in this study represents an important advancement beyond traditional approaches that tend to focus on either organizational or network-level phenomena without adequately addressing their interconnections. By examining how processes at different levels influence and constitute each other, the research provides a more comprehensive framework for understanding learning in complex organizational networks.

From a practical perspective, the findings offer valuable guidance for managers and network facilitators. The emphasis on multilevel coordination mechanisms highlights the importance of designing governance structures and processes that explicitly address learning across organizational boundaries. The identification of specific subprocesses provides a diagnostic framework that can help practitioners identify strengths and weaknesses in their network's learning capabilities. Furthermore, this study underscores profound implications for strategic management theory, suggesting that network learning is not merely an operational aspect but a critical strategic capability for organizations operating in today's interconnected landscape. For managers navigating collaborative networks, the insights gained provide actionable intelligence to foster collective knowledge creation and adaptation, enabling more effective strategic positioning and execution within complex interorganizational ecosystems.

The research also has important implications for policy and network development initiatives. By clarifying the conditions under which IOL transforms into NL, it provides insights into how policymakers and network facilitators can design interventions that promote collective learning. This is particularly relevant for addressing complex societal challenges that require coordinated action across multiple organizations and sectors.

Several limitations of the current research suggest directions for future investigation. The predominance of qualitative case studies in the literature, while rich in contextual detail, limits the generalizability of findings. Future research would benefit from more quantitative approaches that can test and refine the relationships identified in this study. Longitudinal studies are particularly needed to understand how learning processes evolve over time and how different patterns of development influence network outcomes.

The context-dependent nature of learning processes identified in this study suggests the need for more comparative research across different types of networks and industries. Such comparisons could help identify which aspects of learning are universal and which are context-specific, leading to more nuanced and applicable theories.

Emerging technologies, particularly digital platforms and artificial intelligence, are creating new possibilities and challenges for interorganizational learning. Future research should examine how these technologies are transforming learning processes and enabling new forms of collaboration and knowledge integration.

Finally, the relationship between learning processes and network performance remains underexplored. Future research should investigate how different patterns of IOL and NL contribute to various dimensions of network effectiveness, including innovation, adaptability, and sustainability.

In conclusion, this research advances our understanding of learning in interorganizational contexts by providing a nuanced, multilevel perspective on how individual organizational learning transforms into collective network capability. The findings highlight the importance of coordinated effort across multiple levels and processes, offering both theoretical insights and practical guidance for enhancing learning in increasingly interconnected organizational landscapes.

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