BAR Brazilian Administration Review

ANPAD

Research Article

Interaction Dynamics of Interorganizational Learning in a Strategic Network: From Extension to Internalization

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How to cite: Zandavalli, C., Dandolini, G. A., Steil, A. V., & Watanabe-Wilbert, J. (2025). Interaction dynamics of interorganizational learning in a strategic network: From extension to internalization. *BAR-Brazilian Administration Review, 22*(4), e250085.

DOI: https://doi.org/10.1590/1807-7692bar2025250085

Keywords:
interorganizational learning; learning in interorganizational networks; learning episodes.

JEL Code:
Non adherent

ABSTRACT

Objective: this study aims to analyze the interactional dynamics of extension, interaction, and internalization in the process of interorganizational learning (IOL) in organizations belonging to the same strategic interorganizational network. **Methods:** a qualitative and exploratory case study was conducted in an interorganizational network with a longevity of more than 15 years, composed of public and private legal organizations. Data were collected through meetings, interviews, and document analysis. Thematic analysis was used to examine the data, resulting in five major themes (learning episodes, extension, interaction, internalization, and network). **Results:** the findings show that extension occurs at the organizational level, preparing the organization to participate in the network. Interactions occur at the interorganizational level and focus on knowledge sharing. Finally, internalization at the organizational level seeks to apply this new knowledge. **Conclusions:** the study contributes to research on IOL by discussing the connection between dynamics and their interdependencies. In addition, it confirms the existence of the interorganizational level (expansion of the 4i framework), adding the processes of openness, sharing, and change to IOL research.

Received:
May 02, 2025.
This paper was with the authors for two revisions.

Accepted:
October 08, 2025.

Publication date:
November 27, 2025.

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Funding:
The authors thank the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES, Brasil) and the Instituto Federal Catarinense.

Conflict of Interests:
The authors stated that there was no conflict of interest.

Editor-in-Chief:
Ricardo Limongi
(Universidade Federal de Goiás, Brazil)

Associate Editor:
Diego Coraiola
(University of Victoria, Canada)

Reviewers:
Two anonymous reviewers.

Peer Review Report:
The disclosure of the Peer Review Report was not authorized by its reviewers.

Editorial assistants:
Eduarda Anastacio and Simone Rafael (ANPAD, Maringá, Brazil).

Data Availability: The interviews and internal documents used were provided by the companies under conditions of confidentiality and anonymity, and their identification is not permitted.
BAR – Brazilian Administration Review encourages data sharing but, in compliance with ethical principles, it does not demand the disclosure of any means of identifying research subjects.

Plagiarism Check: BAR maintains the practice of submitting all documents received to the plagiarism check, using specific tools, e.g.: iThenticate.

Peer review: is responsible for acknowledging an article's potential contribution to the frontiers of scholarly knowledge on business or public administration. The authors are the ultimate responsible for the consistency of the theoretical references, the accurate report of empirical data, the personal perspectives, and the use of copyrighted material. This content was evaluated using the double-blind peer review process. The disclosure of the reviewers' information on the first page is made only after concluding the evaluation process, and with the voluntary consent of the respective reviewers.

INTRODUCTION

In the face of economic, social, technological, and sustainability challenges (Bouncken et al., 2015; Greve, 2005; Manring, 2007; Oliveira & Silva, 2022), organizations are reconsidering their strategies. This often implies the need to transcend organizational boundaries to acquire new knowledge through interorganizational learning (IOL) processes. IOL can be understood as an organization's learning process based on the acquisition of knowledge and experiences from other organizations (Kull & Ellis, 2016; Lane & Lubatkin, 1998), in which new knowledge and skills are incorporated into the organization's systems, structures, and/or routines (Iftikhar et al., 2022; Jones & Macpherson, 2006).

From this perspective, Lane and Lubatkin (1998) list three forms of learning among organizations: active, which occurs through benchmarking or intelligence mechanisms; passive, through the search for publications, seminars, and external consultancies; and interactive, through face-to-face relationships with other organizations.

This interactive form can occur through interorganizational networks. Interorganizational networks are defined as complex ties that encompass and interconnect companies and other types of organizations within and between sectors (Dagnino et al., 2015; Powell et al., 1996). They can be understood as vehicles for knowledge sharing, through which organizations can transfer and, at the same time, appropriate knowledge (Gibb et al., 2017; Möller & Svahn, 2006).

Since the network is a potential learning environment, the conceptual challenge is to understand the IOL process that occurs within it (Anand et al., 2020; Mozzato & Bitencourt, 2018) and the interactional dynamics involved (Holmqvist, 2003a; Lane & Lubatkin, 1998). Although some studies have introduced the concept of these dynamics in interorganizational learning (Holmqvist, 2003a; Jones & Macpherson, 2006; Mozzato & Bitencourt, 2014; Wilbert, 2019), they do not detail how they occur or how they are interconnected. In this context, this study aims to analyze the dynamics of extension, interaction, and internalization in the IOL process in organizations belonging to the same strategic interorganizational network.

The theoretical perspective is based on the following authors: (1) Crossan et al. (1999), who conceive organizational learning from a multilevel perspective; (2) Jones and Macpherson (2006), who expand the level of organizational learning to the interorganizational level; (3) Holmqvist (2003a), who presents the concepts of extension and internalization as stages of IOL; (4) Mozzato and Bitencourt (2014), who address the collaborative characteristics between organizations as a mechanism for knowledge exchange; (5) Watanabe-Wilbert et al. (2022), who explain the concept of interaction as the exchange of knowledge that occurs in the context of networks; (6) Powell et al. (1996) and Dagnino et al. (2015), who discuss the concept of networks formed between companies and organizations (interorganizational); and (7) Jarillo (1988) and Knight (2002), who present the typology of the strategic network, which characterizes the network in this study. The network studied is composed of organizations from different sectors that are not part of the same supply chain, as already explored in the literature (cf. Dagnino et al., 2015; Sohn, 2015).

The results of this research deepen our understanding of the integration of IOL dynamics by describing how they occur, at what levels, the main variables that influence them, and the connections between these variables. This knowledge helps organizations manage partnerships and implement new knowledge acquired through network interactions. Additionally, this study contributes to filling theoretical gaps, deepening the understanding of the dynamics that occur in both organizational and interorganizational environments (Holmqvist, 2003a), and in strategies to manage the factors that influence the occurrence of IOL (Anand et al., 2020; Eiriz et al., 2017; Schipper et al., 2023).

INTERORGANIZATIONAL LEARNING IN NETWORKS

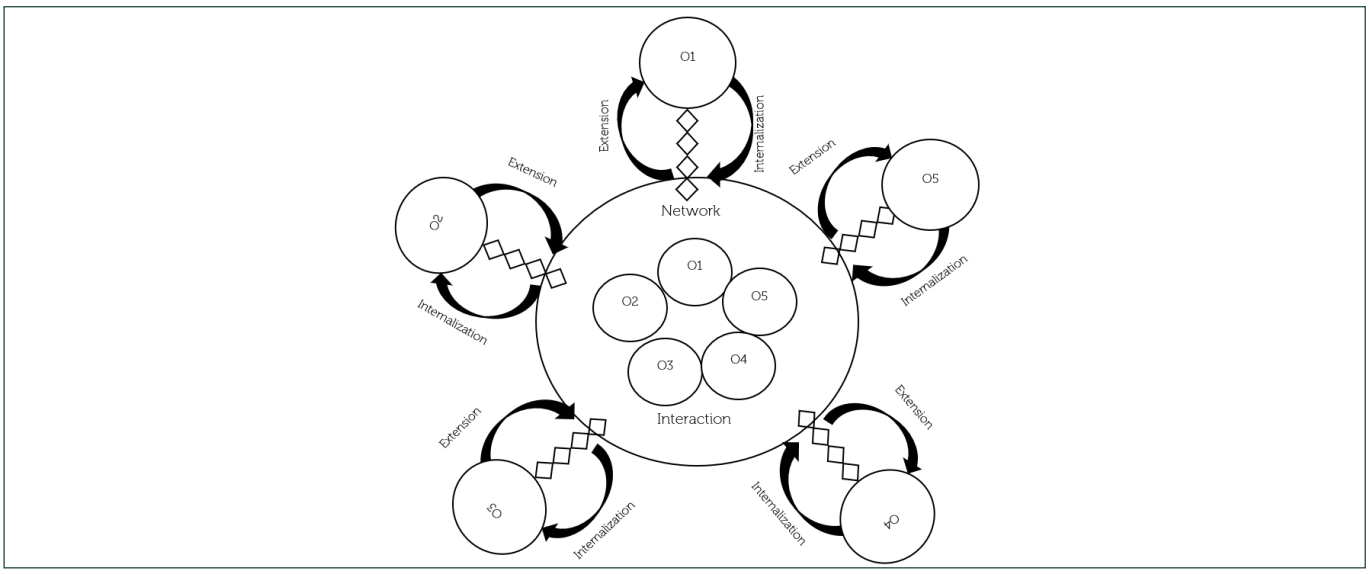
IOL is a learning process in which an organization seeks to improve its processes by acquiring knowledge and experience from other organizations (Kull & Ellis, 2016; Lane & Lubatkin, 1998). The occurrence of IOL is verified through learning episodes, defined as cognitive and/or behavioral changes in the learning organization (Knight, 2002), resulting from the creation or adaptation of organizational routines motivated or influenced by network interactions (Jones & Macpherson, 2006).

The process of IOL can be observed through interorganizational interactions (Lane & Lubatkin, 1998), which may occur within networks. Interorganizational networks (Dagnino et al., 2015) are characterized by complex ties that connect two or more actors (companies and organizations) and transcend sectoral market boundaries (Dagnino et al., 2015; Powell et al., 1996). On the one hand, there is greater complexity in the learning process in networked environments (Holmqvist, 2003a; Mariotti, 2012); on the other hand, there is the opportunity to develop new behaviors that could not be achieved within a single organization (Holmqvist, 2003a; Iftikhar et al., 2022).

Interorganizational networks can be distinguished by their origins. When the motivating factor for their creation is a common territory, we have clusters, industrial districts, local production arrangements, and industrial clusters. When their genesis is motivated by economies of scale, we have supply chains; when the focus is on knowledge integration, we have innovation systems or business networks in general (Sohn, 2015). Networks seeking knowledge collaborate in sharing information and knowledge among organizations, becoming arenas for mutual learning (Lane & Lubatkin, 1998; Mariotti, 2012).

In this context, strategic networks stand out as relationships between organizations that seek to strengthen their competitive positions (Jarillo, 1988). This type of relationship is characterized by long-term arrangements between organizations with distinct but related objectives, which allow companies to gain or maintain a competitive advantage over their competitors. Strategic networks aim to share resources, plans, and actions, and their negotiations are consensual, unlike the hierarchical logic of market competition (Knight, 2002). From the perspective that IOL can occur in a network context, many studies have expanded Crossan et al.'s (1999) 4i framework to the interorganizational level (Jones & Macpherson, 2006; Mozzato & Bitencourt, 2018; Watanabe-Wilbert et al., 2022). In this sense, it is considered a multilevel process involving both organizational and interorganizational learning (Iftikhar et al., 2022; Jones & Macpherson, 2006; Mozzato & Bitencourt, 2018; Silva & Amboni, 2024).

In this expanded model, the 'interaction' between organizations is the dynamic that catalyzes the interorganizational learning process. In addition, two other dynamics stand out: 'extension,' which prepares organizations for a movement from the organizational level to the network level; and the reverse dynamic — 'internalization,' in which organizations return to the organizational level after interaction, enriched by the learning acquired at the network level (Watanabe-Wilbert et al., 2022), which is then incorporated into the organization. Figure 1 illustrates these dynamics in the context of a network.



Source: Developed by the authors.

Figure 1. IOL dynamics in a network.

Figure 1 illustrates the dynamics involved when organizations seek to form a network to acquire new knowledge and exchange their experiences. The figure shows five organizations belonging to a network, represented by outer circles and numbered from one to five. The dynamic of 'extension' describes the process by which an organization opens up to share its experiences and needs with other organizations (Holmqvist, 2003a, 2004) in the network and occurs at the organizational level. 'Interaction' refers to the exchange of information and knowledge between organizations (Wilbert, 2019; Watanabe-Wilbert et al., 2022), which takes place at the interorganizational level — that is, within the network. Finally, 'internalization' represents the opposite flow to extension and deals with how the organization integrates and applies the new knowledge acquired in its organizational environment (Holmqvist, 2003a, 2004). Table 1 presents the variables influencing the IOL process.

Table 1. Variables influencing the occurrence of IOL dynamics.

Dynamics	Variables	Authors
Extension	Organizational culture and internal policies	Abualqumboz (2015); Forgiarini (2019); Halachmi and Woron (2013); Sohn (2015); Wilbert (2019); Zaghab (2011)
	The individual (organizational representative in the network)	Van Winkelen (2010)
	External pressures	Jones and Macpherson (2006); Silva and Amboni (2024); Wilbert (2019)
	Organizational management support	Van Winkelen (2010)
Interaction	Trust (cognitive, emotional)	Brandão et al. (2018); Forgiarini (2019); Leung et al. (2019); Mozzato and Bitencourt (2018); Ouro et al. (2021); Schipper et al. (2023); Scott (2000); Silva and Amboni (2024)
	Cooperation	Zaghab (2011); Forgiarini (2019); Mozzato and Bitencourt (2018); Scott (2000); Schumacher (2015); Sienkiewicz-Małyjurek et al. (2018); Silva and Amboni (2024); Van Winkelen (2010)
	The individual (organizational representative in the network)	Schipper et al. (2023); Wilbert (2019)
	Formal interaction mechanisms (specialized training, technical visits, meetings, lectures, workshops, email)	Downe et al. (2004); Hartley and Allison (2002); Jones and Macpherson (2006); Oliveira and Silva (2022); Schumacher (2015); Scott (2000); Sienkiewicz-Małyjurek et al. (2018); Wilbert (2019)
	Informal interaction mechanisms (open conversations, contacts during trips and missions, etc.)	Eiriz et al. (2017); Mozzato and Bitencourt (2018); Oliveira and Silva (2022); Silva and Amboni (2024)
	Partner experience	Holmqvist (2003b); Ouro et al. (2021); Zaghab (2011)
	Benchmarking practices (ranking companies for competitive practices)	Leung et al. (2019)
	Network management mechanisms (joint planning)	Gibb et al. (2017)
Internalization	Absorptive capacity of the organization	Cui et al. (2021); Forgiarini (2019); Holmqvist (2003b); Lane et al. (2006); Mozzato and Bitencourt (2018); Zaghab (2011)
	External pressure on the organization	Jones and Macpherson (2006)
	Change process (application of knowledge)	Abualqumboz (2015); Downe et al. (2004); Manring and Moore (2006)
	Organizational management support	Sienkiewicz-Małyjurek et al. (2018)
	The individual (organizational representative in the network)	Hartley and Allison (2002)

Note. Developed by the authors.

Table 1 summarizes the variables that influence the occurrence of extension, interaction, and internalization dynamics. In extension, the organizational culture and internal policies of the learning organization influence the decision to share knowledge with external organizations, opening organizational boundaries to learning and teaching. These internal aspects include routines, actions, and norms that can stimulate collaboration (Sohn, 2015) and cooperation (Forgiarini, 2019) between external partners, as well as the incorporation of learning as a strategic element — that is, fostering a learning-oriented culture (Abualqumboz, 2015).

External pressure on the organization, present in the dynamics of extension and internalization, includes elements that are not controllable by the organization, such as technology and economic or market factors (Jones & Macpherson, 2006; Silva & Amboni, 2024; Wilbert, 2019), and even global crises (e.g., the COVID-19 pandemic). These pressures may not only drive organizations to seek external knowledge through networks but also serve as catalysts for organizational change. Furthermore, the support of the organization's management is vital in the dynamics of extension and internalization, where the manager's role involves encouraging, ratifying, and sustaining the organization's participation in the network (Sienkiewicz-Małyjurek et al., 2018; Van-Winkelen, 2010), as well as supporting the implementation of newly acquired knowledge and facilitating the IOL process (Sienkiewicz-Małyjurek et al., 2018).

In the dynamics of interaction, trust and cooperation are necessary for establishing strong relational ties between partners, as significant exchanges of strategic and confidential information and knowledge are required in the long term (Scott, 2000; Janowicz-Panjaitan & Noorderhaven, 2009; Leung et al., 2019; Mozzato & Bitencourt, 2018; Schipper et al., 2023; Sienkiewicz-Małyjurek et al., 2018; Silva & Amboni, 2024). Cooperation between different actors can occur in both formal and informal spaces (Mozzato & Bitencourt, 2014). Formal spaces include specialized training, technical visits, meetings, lectures, workshops, and emails (Downe et al., 2004; Hartley & Allison, 2002; Jones & Macpherson, 2006; Schumacher, 2015; Scott, 2000; Sienkiewicz-Małyjurek et al., 2018; Wilbert, 2019). Informal interactions, on the other hand, are represented by open conversations in informal settings, encounters during trips and missions, and so on (Eiriz et al., 2017; Scott, 2000; Sienkiewicz-Małyjurek et al., 2018; Wilbert, 2019).

Another important point is that partners' experience and market recognition of their successful practices enrich the variety of knowledge available in the network (Holmqvist, 2003b; Ouro et al., 2021; Zaghab, 2011). Benchmarking is a significant approach because it allows an organization to compare itself with the best in

the market (Leung et al., 2019). This methodology helps choose partners based on market recognition, which facilitates learning and adapting organizational processes to achieve better results. Finally, management mechanisms (tactical level, such as planning and operation) and governance (strategic level, encompassing the rules that guide the performance of a partnership) influence the dynamics of IOL (Forgiarini, 2019; Gibb et al., 2017).

Regarding the internalization process, it is worth noting the learning organization's absorptive capacity, which is needed to effectively implement the knowledge gained through interaction (Cui et al., 2021; Forgiarini, 2019; Holmqvist, 2003b; Mozzato & Bitencourt, 2018; Zaghab, 2011). This capacity is defined as an organization's ability to value, transform, and apply new knowledge in the organizational context (Lane et al., 2006). For an organization to appropriate the acquired knowledge and promote the change process, it is necessary to: (1) recognize and understand the new knowledge as important; (2) adapt the acquired knowledge to its organizational reality; and (3) apply the new knowledge to improve organizational results (Lane et al., 2006). The change process involves several stages, beginning with convincing senior management, followed by raising awareness, implementing operational changes, and monitoring results (Abualqumboz, 2015; Downe et al., 2004; Manring & Moore, 2006). Finally, the individual, who is the institutional representative of the organization in the network, plays a central role in all three dynamics. This agent brings institutional information and knowledge to the network (Van-Winkelen, 2010), interacts on behalf of the organization (Schipper et al., 2023; Wilbert, 2019), and reintegrates the acquired knowledge into their organization of origin (Hartley & Allison, 2002), functioning as a link between the three dynamics.

METHODS

This is a qualitative and exploratory research study. Within this approach, the researchers opted for a single case study (Creswell, 2021; Yin, 2016), a strategy that allows for a deeper understanding of the object under study (Yin, 2016). "The fundamental interest of the case study lies in the process rather than the results, in the context rather than a specific variable, in discovery rather than confirmation" (Merriam, 2002, p. 19). This strategy aligns with the objective of this study, which is to analyze the dynamics of IOL and how they occur in a strategic network, rather than the results produced by it. Data were collected through documents from the investigated network, semi-structured interviews, and the researcher's observations at network meetings. The data were analyzed using Braun and Clarke's (2006) thematic analysis (TA), which they describe as "a method for identifying and analyzing patterns in qualitative data" (Braun & Clarke, 2012, p. 3).

Case selection and research subjects

To meet the study objective, a strategic network with the following characteristics was selected: (1) it has several organizations that interact with each other, sharing knowledge within the network; (2) it has long-standing relationships; and (3) it operates independently of the market, that is, it does not participate in the same supply chain. The Benchnet network (fictitious name) was selected because it met the criteria mentioned above. It was created in 2005 by organizations interested in exchanging good business management practices. According to the network's founding charter, its main objectives are to implement benchmarking actions, ensuring the effectiveness, results, and objectivity of the work, using the benchmarking methodology recommended by the National Quality Foundation (FNQ) as a reference. These characteristics make Benchnet a strategic network (cf. Jarillo, 1988; Knight, 2002), as detailed in the Results and Discussion sections.

At the time of data collection, the network included organizations from different areas: logistics, sanitation, agribusiness, automotive, education, energy distribution, and research and development. It should be noted that these areas differ in their fields of activity and have no direct link in the supply chain. The organizations are both public and private in nature, and there are no alliances or joint ventures between them for the co-production of products or services (therefore, there is no interdependence between them). Five Benchnet organizations that had experienced learning episodes participated in this study. Each organization had two representatives, whose experience in the network varied between 1 and 14 years. All participants worked in strategic management areas in their respective companies. At the request of the participants, the anonymity of the organizations, the network, and the interviewees was guaranteed. Thus, codes O1 to O5 were used to name the organizations, codes E1 to E10 for the interviewees, and the network was named Benchnet.

DATA COLLECTION

Data were collected between September 2021 and March 2022. The interview script was developed based on the literature review and definitions in Table 2. During the interviews, data were collected on the three dynamics of IOL — extension, interaction, and internalization — and the learning episodes experienced by the organizations. The occurrence of these episodes shows that the organization learned from its participation in the network.

After identifying the learning episodes, the interviews focused on the dynamics of IOL, investigating how they manifested throughout the process. Companies participating in the network that had not experienced learning episodes did not participate in this study.

Table 2. Constructs, basic definition, and source of data collection.

Constructs	Core definition	Source of collection
Learning episodes	Events that characterize changes in the learning organization based on its interaction with the network (Knight, 2002).	Interviews (10 interviewees from five organizations).
Extension	The openness or readiness of an organization to share its experiences and needs with other organizations (Holmqvist, 2003a, 2004).	Interviews, documents (public and private), observation (six virtual network meetings).
Interaction	Exchange of knowledge in collaborative or cooperative relationships between organizations participating in a network (Wilbert, 2019; Watanabe-Wilbert et al., 2022).	Interviews, documents (public and private), observation (six virtual network meetings).
Internalization	The way an organization brings and uses new knowledge resulting from interaction with the network in its organizational environment (Holmqvist, 2003a).	Interviews (10 interviewees from five organizations) and documents (public and private).

Note. Developed by the authors.

To reduce potential biases, compare information from different data sources, and gain a greater understanding of the phenomenon under study, three different data sources were used to triangulate information (Taylor et al., 2015), as follows:

- Field observation (network meetings), monitored through a virtual environment, between September 2021 and February 2022, covering six meetings and generating eight pages of transcription;

- Interviews, semi-structured and conducted in a virtual format (recorded via Meeting, Zoom, and Teams), lasting between 30 and 57 minutes, between September 2021 and March 2022, generating 104 pages of transcription. The decision to conduct interviews virtually was due to the fact that the research was carried out during the global pandemic;

- Public and private documents of the network: website pages (public) and documents (private), such as minutes, rules of procedure, and files presenting the network, with a total of 20 pages.

The total document corpus resulted in 132 pages for analysis. The document corpus was placed in a single file, separated by collection method, in which the reading and coding for thematic analysis began, as explained below.

DATA ANALYSIS

Thematic analysis (TA) was used to analyze the data (Braun & Clarke, 2006). TA is "a method for identifying and analyzing patterns in qualitative data" (Braun & Clarke, 2012, p. 3). TA consists of six phases: familiarization with the data, coding, searching for themes, reviewing potential themes, defining and naming themes, and producing the final report (Braun & Clarke, 2006, 2012). In the 132 pages of the document corpus, both deductive and inductive codes were created based on a manual analysis of excerpts and were organized in a spreadsheet (Excel). Table 3 presents a sample of the codes, categories, and themes.

Table 3 presents a sample of the relationship between codes, themes, and categories resulting from the application of TA, which resulted in five themes, 29 categories, and 90 codes (inductive and deductive).

Table 3. Themes, categories, and codes — sample.

Themes	Categories	Codes (deductive/inductive)
Learning episodes	Organization 1	Implementation of the processes area (inductive)
	Organization 2	Implementation of the management model (inductive)
Extension	Culture and internal policies	Benchmarking culture (deductive)
	Organizational demands	Strategic themes (inductive)
Interaction	Formal interaction mechanism	Meetings (deductive)
	Internal relations	Value recognition (inductive)
Internalization	Absorptive capacity	Application of knowledge (deductive)
	Institutional representative	Information link (inductive)
Rede	Network principles	Values (inductive)
	Regulations	Decision-making process (inductive)

Note. Developed by the authors.

This research used the validity and reliability criteria proposed by Merriam and Tisdell (2016): (1) data triangulation, (2) data validation by respondents, (3) adequate commitment to data collection, (4) clarification of the researcher's position, and (5) peer review.

RESULTS AND DISCUSSION

This section presents and discusses the research results. First, the characteristics of the Benchnet network are presented in the context of IOL. Next, the learning episodes are described, highlighting the IOL. The dynamics of the extension, interaction, and internalization of IOL are then explained. Finally, the integration of the dynamics and the multilevel perspective of learning is presented.

The Benchnet network as the context for IOL

Benchnet is an interorganizational network with strategic network properties, as there is a cooperative relationship among companies to strengthen their competitive positions (Jarillo, 1988), and it employs a process of negotiation among peers (rather than a hierarchical logic) (Knight, 2002). The negotiation process as a guide for relationships is observed from the sharing of resources to the implementation of joint plans and actions by partners. Cooperation in strategic networks is an efficient mechanism for the creation, recombination, transfer, and integration of knowledge (Larsson et al., 1998; Mariotti, 2012; Mozzato & Bitencourt, 2018). Benchnet is composed of ten organizations from various sectors that are not dependent on one another. With a history spanning more than 15 years, the network employs cooperation among its participants as a strategy to achieve its objectives. These characteristics were observed in the interviewees' reports.

> If you had a question, "Oh, I need an answer urgently," you would talk to one person, then another, and soon you would have the information you needed (O5, E1). What makes it easier is that I see it as something that is totally alive, without any rules. I know that one or two issues are prioritized each year. And what makes it easier, I think, is that it's free in the sense that you can seek what you need at that moment. People are free to help you at that moment. Whenever we needed information, the people who participated [in the network] were always open to passing on information, to providing guidance (O1, E2). (Translated from Portuguese)

Learning episodes: evidence of IOL in organizations of the network

IOL is evidenced by changes in an organization's properties, such as systems, structures, procedures, culture, routines, or strategies (Knight, 2002; Wilbert, 2019), based on the incorporation of new knowledge resulting from its interaction with other organizations in the network (Knight, 2002; Wilbert, 2019).

In the Benchnet network, respondents reported 10 episodes in which they participated, either as executors of change in their organization or as intermediaries. To clarify, Table 4 presents two of these episodes categorized according to IOL dynamics.

Table 4. Learning episodes and the dynamics of IOL.

Episode/Organization	Dynamics	Description
Implementation of the process improvement area/(O1)	Extension	O1 needed to better structure its process improvement area, as there was an overlap of responsibilities and this needed to change. Thus, the institutional representative took this demand to be discussed at Benchnet.
	Interaction	The representative from O1 was able to arrange on-site visits to organizations O4 and O5, which had well-structured processes in this area, in order to observe and gather information.
	Internalization	The representative O1 then consolidated all the data collected and shared it with the organization's strategic area, which approved the change plan to create the process improvement area within the organization.
Implementation of the corporate governance area/(O3)	Extension	O3 needed to implement corporate governance within the organization. Its institutional representative therefore took this request to the network, with the aim of identifying whether any organization had good practices in this area.
	Interaction	The institutional representative of O3 in the network was responsible for implementing corporate governance at O3. The representative then scheduled two on-site visits, on O4 and O5, to gather information and knowledge about governance. "I went alone to O4 ... and to O5 I took two colleagues from related areas who could also take advantage of this opportunity ..." (O3, E1).
	Internalization	The information and knowledge gathered during the visit were shared with the strategic areas of O3, with the necessary adjustments to the reality of the organization. After approval by management, the process of implementing the corporate governance area at O3 began.

Note. Developed by the authors.

Within extension dynamics, the topics introduced for interaction with the network were driven by strategic issues that the organization aimed to change or improve. During the interaction, the predominance of on-site visits was evident. This method of interaction allows an organization to directly observe the execution of tasks or processes, facilitating access to tacit knowledge acquisition.

Finally, during internalization, representatives of the organization socialize the information and knowledge acquired, adapting them to the organizational reality to begin the process of incorporating the new knowledge

into the organization. The process of change within the organization, triggered by the interactions mentioned, evidences IOL.

Extension dynamics: Openness to sharing

Extension dynamics are a critical element in initiating the flow of information and knowledge between the organization and the network. This refers to an organization's preparation and readiness to actively engage in the network. Extension occurs within the learning organization, with culture, internal policy, and management support identified as the main variables that facilitate the organization's willingness to interact and share knowledge with other network participants.

At Benchnet, the search for external knowledge from recognized partners in the market and the use of similar management models were highlighted as facilitators in the creation and maintenance of the network, as reported:

> O1 has a keen interest in maintaining relationships with its stakeholders and participating in these collaborative environments, these benchmarking groups, for co-creation ... (O1, E1). ... what motivates the company to participate in the network is basically the fact that it can share its experiences with a select group of organizations ... (O4, E1). (Translated from Portuguese)

The culture of seeking knowledge outside one's environment and the willingness to establish partnerships to exchange good management practices can facilitate an organization's readiness to teach and learn in external contexts. This comparison with the market and the search for new knowledge have been highlighted in the literature as factors that drive organizational change and the creation of networks (Halachmi & Woron, 2013; Wilbert, 2019).

Culture and formal internal policies (formal documents) and informal policies (organizational routines and habits not explicitly formalized) were identified in the interviews as factors influencing the organization's behavior when sharing knowledge within the network. The organization's openness to receiving network partners on site visits demonstrates a culture of "openness to learning and teaching," as reported by the interviewees:

> ... it wasn't about politics; it was about culture. O5 always had an open-door policy. We were visited daily by all companies; every place always visited O5 (O5, E1). When we do things with the intention of teaching, we end up understanding that we have a lot to learn (O5, E1). It was quite common to participate in networks with other organizations. Each specific area is linked to its theme (O1, E2). (Translated from Portuguese)

This openness to learning and teaching is corroborated by Easterby-Smith et al. (2008), who report that an organization competent in absorbing external knowledge must also be capable of teaching and disseminating knowledge beyond its boundaries. The organizations (O4, E1, E2, E3; O5, E2; O2, E1, E2) also described benchmarking practices in their culture and internal policies.

These practices encourage companies to look beyond their own borders in a planned process of comparing themselves with the market in search of new knowledge (Ammons & Roenigk, 2015; Halachmi & Woron, 2013; Wilbert, 2019). The culture of benchmarking encourages this motivation to learn and teach new things — that is, to be open to sharing information and knowledge, promoting transparency, as evidenced by Larsson et al. (1998), or the organizational 'openness' emphasized by Holmqvist (2003a, 2003b).

The dynamics of interaction: Exchange seeking knowledge acquisition

The dynamics of interaction occur at the interorganizational level — in this case, within the network. These dynamics facilitate the process by which organizations seek external knowledge and share their own knowledge. The main variables driving this interaction dynamic include exchange mechanisms among partners, recognition of specific knowledge, internal relationships among participants, governance, and network management.

Formal and informal exchange mechanisms were identified at Benchnet. Informal mechanisms include online chats and telephone conversations, while formal mechanisms include emails, network meetings (virtual and face-to-face), and on-site visits. These visits consist of traveling to one of the organizations that master the topic of interest to the learning organization and allow direct observation of organizational practices. They can be requested by the network, in which several organizations visit the host, or by a specific organization with a unique interest. These visits aim to learn from the partner's practical experience (Scott, 2000). Formal and informal exchange mechanisms aim to facilitate the sharing of tacit and explicit knowledge among organizations in a network (Hartley & Allison, 2002; Mozzato & Bitencourt, 2018; Scott, 2000; Silva & Amboni, 2024).

Recognizing a partner's experience is paramount for Benchnet. This can be seen in the interviewees' statements:

> I think that whenever we had these face-to-face visits, it made the most sense for us, visits when there is a focused objective ... (O2, E2). ... when other companies know that we have this well-structured and implemented, they open doors for us to receive visits, to share these good practices as well (O2, E1). Experience and sharing are very personal, very cultural things; they cannot be conveyed through a manual (O5, E1). These are usually confidential matters, and through [the network] you have access to them, you have more openness to obtain information (O1, E2). (Translated from Portuguese)

The recognition of specific knowledge among network partners through awards and certifications was identified as an important variable in choosing a partner, as it aims to share best practices. Statements such as "because they are a 'select group of organizations,'" "with renowned expertise" (O4, E1), and "with good practices recognized in national management awards" (O2, E1) demonstrate the importance of a partner's recognition in society. Learning from partners' experiences highlights the tacit knowledge of individuals and groups, which is difficult to explain and codify, as it also depends on the context in which the individual operates (Dorow et al., 2018; Hamel, 1991; Hunter et al., 2002; Nonaka & Toyama, 2003). Internal relationships, which foster trust and cooperation among network participants, were cited as key factors in accessing new knowledge.

> At certain times, the relationships they establish for institutional purposes end up gaining a degree of trust and even turning into personal relationships (O4, E1). ... we had a relationship between the people in the group; I have people from the group that I still talk to today (O5, E1). They are people with whom I still talk today. I left O1 a year ago, and I still have contact with people in the network (O1, E2). ... If I had to point out one of the strengths here, besides interpersonal relationships from an institutional point of view, it would be the history of the initiative, but fundamentally, the interpersonal relationships established there. It's impressive when you establish bonds of trust and productivity increases ... (O4, E1). (Translated from Portuguese)

Collaborative and/or cooperative environments are fundamental to the success of interorganizational relationships focused on learning, as they facilitate knowledge sharing during network interactions (Brandão et al., 2018; Forgiarini, 2019; Leung et al., 2019; Mozzato & Bitencourt, 2018; Ouro et al., 2021; Silva & Amboni, 2024; Van-Winkelen, 2010).

Trust among partners evolves from behavioral trust in the early stages of relationship formation to structural trust in the commitment stage (Schipper et al., 2023; Van-Winkelen, 2010). In addition, cooperation and similarity in language were identified as aspects facilitating interaction among organizations. Several authors (Forgiarini, 2019; Larsson et al., 1998; Mozzato & Bitencourt, 2018; Schumacher, 2015) recognize cooperative relationships in interorganizational environments as a factor that increases knowledge sharing between organizations. The similarity of organizations in terms of knowledge base, organizational structure, and social proximity is highlighted by Abualqumboz (2015), Mozzato and Bitencourt (2018), and Ouro et al. (2021) as a way to bring together and strengthen relationships among network members. Finally, the Benchnet network adopts network management and governance mechanisms.

Benchnet's management activities are outlined in its internal regulations, which cover the functioning of the network, including meetings, network coordination and responsibilities, and dissemination of information. Other management tools used by Benchnet include annual planning, meeting minutes, attendance tracking for participating organizations, and cloud storage of documents for easy access and consultation across the network. The annual plan for the network includes meeting dates, topics to be discussed throughout the year, and those responsible for bringing them up for discussion.

According to Sydow and Windeler (1997) and Roth et al. (2012), this planning represents one of the main network management tools, playing a vital role in network allocation and regulation functions. Management activities are responsible for planning, executing, and controlling strategies and actions within the limits established by governance (Roth et al., 2012). The management of an interorganizational network refers to a set of processes and practices carried out by a group of individuals, focused on defining the direction to be taken by the network and on the allocation and implementation of resources (Gibb et al., 2017; Hibbert et al., 2008). In this sense, management focuses on organizing the network so that it acts cohesively and plans actions to achieve results agreed upon by the participants. It is also responsible for monitoring the network's results and reconfiguring it when necessary to achieve results.

Governance (an inductive code in this research), focused on structural and instrumental elements (Albers, 2005; Roth et al., 2012), is evident in Benchnet through formal documents such as the membership agreement and the network's internal regulations. The former specifies the institutional representative who acts as an intermediary between the organization and the network,

the voluntary nature of the organization's participation, and the confidentiality and privacy of the information exchanged within the network. Through this agreement, the representative and the organization agree to comply with the network's regulations. The second document addresses the network's objectives, composition, obligations of member organizations, membership criteria, and the decision-making process.

Governance is responsible for defining the network structure, detailing organizational roles, establishing regulatory mechanisms, and defining the decision-making process, whereas management is responsible for planning, executing, and controlling strategies and actions within the limits established by governance (Roth et al., 2012). According to Albers (2005) and Roth et al. (2012), governance emerges from a process of negotiation and discussion among members of the interorganizational network, is less flexible in nature, and tends to be modified less frequently than management. The configuration of interorganizational network relationships is considered complex, especially in terms of power relations and cultural diversity among partners. In this sense, governance mechanisms support the dynamics of interaction as they guide the network's strategic actions, focusing on collective results. While respecting the individuality of each organization, governance also explicitly establishes the role of each member and of the network as a whole.

Internalization: From socialization to organizational change

Internalization dynamics occur at the organizational level but with characteristics that differ from those evident in extension dynamics. The dynamics of internalization involve the application of knowledge acquired through organizational interactions in the network, adapted to the reality of the learning organization. The main variables influencing the incorporation of this new knowledge by the learning organization include external pressure, culture, internal policy, and the organization's absorptive capacity. External pressures bring challenges that cause organizations to change their procedures and even make strategic adjustments.

Changes in legislation, environmental crises, climate crises, and pandemics are examples of such external pressures. However, these pressures can also be strategically used by the organization to justify organizational changes that would otherwise be difficult to implement. At Benchnet, for example, one interviewee (O4, E1) mentioned how the environmental crisis and changes in state regulations helped convince the organization to make necessary organizational changes. Culture and internal policy introduce actions and regulations that can act as catalysts or barriers to the internalization of new knowledge in a learning organization. The culture of benchmarking within organizations acts as an incentive for the internalization of new knowledge. Organizations with more mature benchmarking processes find it easier to systematize new knowledge within their structures. Some reports confirm these statements:

> So... when we seek benchmarking, it is because the practice will be implemented. This is very cool, it has been happening for a long time in O4, you could say that it is already an established ritual (O4, E3) ... implementing benchmarking is a learning experience for us, seeing others and there is always a hint of adaptation to our reality (O2, E1). Therefore, we have a standard, a form [for technical visits], that is available in a directory that is accessible to all O2 units (O2, E2). (Translated from Portuguese)

Another variable that must be considered in the dynamics of internalization is the absorptive capacity of the learning organization (Cui et al., 2021; Forgiarini, 2019; Holmqvist, 2003b; Mozzato & Bitencourt, 2018; Scott, 2000). Absorptive capacity is an organization's ability to recognize the value of new knowledge, transform it, and apply it within the organization (Lane et al., 2006; Neves, 2017). Based on these considerations, it can be seen that the recognition of the value of new knowledge begins in the learning organization through the process of socialization. Socialization consists of disseminating the knowledge acquired in the network to the areas of interest of the organization so that they can assess its potential applicability.

After acknowledging the value of knowledge, organizations adapt it to their circumstances (O4, E1; O4, E3; O2, E1; O1, E2). This can be observed in the interviewees' comments:

> I structured it as it was, how we were at O1, the way O5 was, and on top of that, within our context, I made my proposal for change (O1, E2). ... And then, of course, we're going to look for information, and we're not going to copy and do the same thing; we have to adapt and adjust to our context (O2, E1). I didn't implement it the same way; I improved it. I improved the process (O4, E2). Benchmarking itself, in its own methodology, tells you not to go there and simply copy; you have to bring it in, adapt it, and improve it (O4, E3). (Translated from Portuguese)

In the literature, this process is called transformation (Lane et al., 2006; Neves, 2017) or translation Holmqvist, 2003a, 2004). This transformation is understood as the

combination of the experiences of new knowledge explored in the network with the adaptation of this knowledge for application in the learning organization.

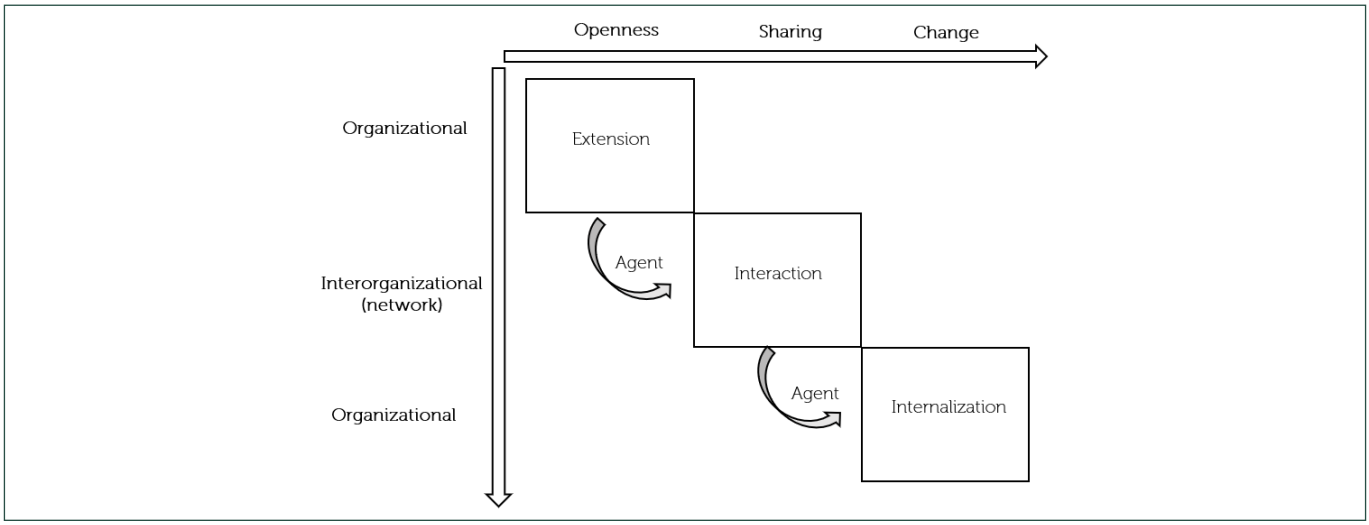
After transforming (adapting) this new knowledge to the context of the organization, the process of applying the knowledge begins, that is, the process of organizational change. This process can be slow or fast, depending on factors such as the degree of change, the size or nature of the organization, among others, as reported by the interviewees:

> It all depends on the size of the change and what was consulted (O2, E2). In a universe with almost 7,000 employees, spread across 346 municipalities, establishing a change management process is extremely complex. ... So... every change movement is not quick; every change movement requires persuasion, every change movement requires identification of value. Each professional sees value in that change differently (O4, E1). In this presentation, we had all the data, numbers, values, how it would impact us, how much we would save, and which KR indicators could bring us results. So all of this was based on the information that was presented to the board, and then they gave the go-ahead and said we could proceed (O1, E2). An agreement was made with all employees; work was done with all employees involved, all managers ... (O2, E1). (Translated from Portuguese)

At this stage of applying new knowledge, the company implements changes in its processes, focusing on improving its organizational results (Lane et al., 2006).

Integration of dynamics and levels of interaction

Based on the results and discussions presented in the previous subsections, Figure 2 illustrates the three dynamics of IOL (extension, interaction, and internalization), the levels at which they occur (individual [agent], organizational, and network), their main processes (openness, sharing, and change), and their interconnections:



Source: Developed by the authors.

Figure 2. Interconnections of IOL dynamics, levels, and processes.

The dynamics of extension, which occur at the organizational level, enhance the organization's ability to open up to teaching and learning new knowledge. The organization prepares to work with network partners, thus beginning the stage of receptivity to new knowledge acquisition. In this process of opening up (Figure 2), the organization also makes available the information and knowledge it wants to share with its network. In the search for this information, elements such as culture, internal policy, and management support for the organization's participation become important variables in the process, as they can promote or hinder the organization's participation in the network. In this sense, Proposition 1 is suggested: the culture, internal policy, and management support of the learning organization influence how it will act in the network.

The extension dynamics fuel the next dynamics, which is interaction. In these dynamics, which occur at the interorganizational level (network), the focus is on sharing information, knowledge, and experiences among organizations. In this sharing process, organizations present their knowledge demands, share their successful experiences, and assist partners in searching for new knowledge. As influencers in this process, cooperation, trust, and similarity of knowledge among partners are identified as key facilitators of knowledge sharing. Thus, Proposition 2 is suggested: the greater the relationship of trust, cooperation, and similarity of

knowledge between partners, the greater the sharing of knowledge between them in the network. In addition, network governance and management mechanisms help organizations understand the limits of each other's and the network's activities, as well as organize the coordination of activities and network planning.

The information and knowledge obtained in the interaction dynamics feed into the next dynamic. The dynamics of internalization involve the application of knowledge acquired through organizational interactions in the network, brought to the reality of the learning organization. In these dynamics, which focus on the organizational level, the emphasis is on the process of change (Figure 2). Thus, the learning organization uses the new knowledge acquired in the network to initiate the process of organizational change. This process encompasses several stages, ranging from awareness-raising to the implementation of new practices. The culture of benchmarking has been identified as a facilitator of the change process, as it focuses on the market and makes the organization more receptive to improving its internal processes. Another facilitator in this process is the organization's absorptive capacity, which makes the organization value new knowledge, adapt it to its needs, and apply it in its organizational practices. Based on this, Proposition 3 is suggested: the absorptive capacity of the learning organization positively influences the dynamics of IOL internalization.

The dynamics of internalization become the end of the IOL cycle of a network of organizations, since it is through the process of organizational change and change itself, motivated by the new knowledge acquired, that it becomes evident that the organization has learned. As shown in Figure 2, another important factor in the IOL cycle is the link among the dynamics, which feed subsequent stages with information and knowledge.

In this sense, this research highlights the role of the institutional representative, who, in addition to representing the individual level of the IOL, also acts as an organizational agent. Their role is fundamental, as they are responsible for gathering information and knowledge and bringing it to the network. In the interaction dynamics, they present the demands and share the experiences of their organization. Finally, in internalization, they are responsible for socializing new knowledge within the organization and raising awareness across it, contributing to the change process necessary for the application of new knowledge.

In other words, the institutional representative is the pollinator that conducts knowledge among dynamics, connecting them and enhancing the occurrence of learning episodes. Thus, Proposition 4 is suggested: interorganizational learning (IOL) depends on the agent's ability to act as an integrating link, connecting the processes of openness, sharing, and change between the organizational and interorganizational levels.

In summary, IOL, in the context of interorganizational networks, is a process that involves three dynamics — extension, interaction, and internalization — which are fueled by an agent. These dynamics have fundamental processes, namely openness, sharing, and change. In addition, there are three levels of learning: individual, through the institutional representative; organizational, through the learning organization; and interorganizational (through the network).

FINAL CONSIDERATION

This study analyzed the interactional dynamics of the extension, interaction, and internalization of IOL in and among organizations in a strategic interorganizational network for mutual learning, using a multilevel perspective. Results show that the institutional representative, at the individual level, played the role of an agent of the organization and acted as a link among the three dynamics of IOL. In extension dynamics, they seek the organization's demands and contributions and take them to the network; in interaction dynamics, they share, negotiate, and act on behalf of their organization to acquire new knowledge; and in internalization dynamics, they socialize knowledge and assist in adapting it to the reality of their organization, as well as participating in its application process.

At the organizational level, in extension dynamics, the organization's openness to share information and knowledge with the network was evident. The role of the organization, through its culture, internal policy, and management, helps prepare it for networking. In terms of interaction dynamics, the organization acts directly when it receives on-site visits and indirectly through its culture, which influences institutional representatives and their actions within the network. Regarding the dynamics of internalization, an organization's ability to absorb new knowledge from the network (socialization, adaptation, and application) stands out.

At the interorganizational level, which occurs within the network, the dynamics of interaction take place, leading to the sharing of information and knowledge between organizations. New knowledge is acquired through interactions among network partners. Cooperation, trust, and similarity in strategic knowledge among network partners facilitate knowledge sharing. In the connections between the dynamics, an interdependent relationship among them was observed. The extension dynamic provides information and knowledge for the interaction dynamic, serving as an import-

ant input for the organization's engagement with the network. It is during the interaction dynamic that the sharing of new knowledge among participants occurs, which then serves as a basis for internalization. Finally, it is through internalization that new knowledge reaches the learning organization and initiates the process of organizational change.

This study advances knowledge about IOL by discussing the connection among the dynamics that occur in strategic interorganizational networks in an interdependent manner, driven by an institutional agent. In addition, studies on the expansion of the 4i framework to the interorganizational level are confirmed, adding to the IOL the processes of openness, sharing, and change present in the dynamics. Also noteworthy is the inductive code 'governance mechanisms' applied to the network under study, which, among other guidelines, emphasizes the limits of each network member's actions.

Nevertheless, in light of Proposition 1, it is suggested that the variables 'culture,' 'internal policy,' and 'management support' can be examined both collectively and individually to assess their impact on the performance of a learning organization within a network. Additionally, it is recommended that other propositions be tested in different network contexts and serve as a foundation for future quantitative studies on this topic.

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