Gestão & Regionalidade

Type of article:
Original Article

Received: 28/05/2024
Accepted: 14/10/2024

Interorganisational cooperation networks: analysis of the relationship between configuration, governance practices, and co-evolution

Redes interorganizacionais de cooperação: análise da relação entre configuração, práticas de governança e coevolução

Erika Mayumi Kato-Cruz[12], ORCID: https://orcid.org/0000-0003-1690-0997; **Sérgio Bulgacov**[2], ORCID: https://orcid.org/ 0000-0002-9596-814X; **Gustavo Yuho Endo**[1]*, ORCID: https://orcid.org/0000-0003-2737-6596; **Luciana Iwashita da Silva**[3], ORCID: https://orcid.org/ 0000-0001-5250-8568.

1. Universidade do Oeste Paulista, *Business School* Unoeste, Presidente Prudente, São Paulo, Brasil.
2. Fundação Getúlio Vargas, Escola de Administração de Empresas de São Paulo, São Paulo, São Paulo, Brasil.
3. Centro Universitário FEI, São Bernardo do Campo, Brasil.
***Autor correspondente**: gustavo_endo@yahoo.com.br; Rodovia Raposo Tavares, km 572 - Bairro Limoeiro, Presidente Prudente - SP – Brasil, CEP: 19.067-175.

Resumo
Ambientes complexos e incertos estimulam a formação de arranjos interorganizacionais, como as redes, na busca pela melhoria de competitividade das empresas. Nesse sentido, objetiva-se compreender o funcionamento de redes interorganizacionais sob a análise dos microfundamentos da coevolução das firmas, e destas com a rede, ao longo de seus processos transacionais, bem como dos mecanismos de controle que regem tal relacionamento. Para tanto, foram estudadas três redes nacionais que envolvem múltiplos atores (organizações filiadas e externas) por meio de estudo de caso. Os resultados apontam para a existência de coevolução entre os agentes participantes das redes, assim como destes com as redes, indicando diferentes níveis de coevolução de acordo com a participação das empresas em rede. Do mesmo modo, nota-se a influência da configuração das redes e de suas práticas de governança sobre a coevolução, moldando o perfil das relações e os processos transacionais.
Palavras-chave: interorganisational cooperation relationships; network configuration; configuration of network governance practices; co-evolution.

Abstract
Complex and uncertain environments encourage the formation of interorganisational arrangements, such as networks, in the pursuit of enhanced business competitiveness. In this context, the objective of this study is to understand how interorganisational networks operate through the lens of the microfoundations of firm co-evolution—both among firms and between firms and the network—throughout their transactional processes, as well as the control mechanisms that govern these relationships. To achieve this, three national networks involving multiple actors (both affiliated and external organisations) were examined through case studies. The findings reveal the existence of co-evolution among network participants and between the participants and the networks themselves, indicating varying degrees of co-evolution depending on firms' engagement with the network. Similarly, the network configuration and governance practices influence co-evolution, shaping the nature of relationships and transactional processes.
Keywords: interorganizational cooperative relationships; network configuration; network governance practices configuration; coevolution.

Citation: Kato-Cruz, E. M., Bulgacov, S., Endo, G. Y, & Silva L. I. (2026). Redes interorganizacionais de cooperação: análise da relação entre configuração, práticas de governança e coevolução. *Gestão & Regionalidade*, v. 42, e20269630. https//doi.org/10.13037/gr.vol42.e20269630

1 Introduction

Complex and uncertain environments encourage the formation of interorganisational arrangements, such as networks, in the pursuit of enhanced business competitiveness (Jarillo, 1988; Nohria & Eccles, 1992; Ring & Van de Ven, 1994; Park, 1996; Balestrin, Verschoore, & Perucia, 2014). From a performance perspective, Provan and Kenis (2008) discuss network effectiveness as a key factor for achieving positive outcomes for participants. This effectiveness is directly linked to network governance, as the results obtained by the participating organisations vary depending on the type of governance adopted.

The study of the evolution of governance is essential to understanding the effectiveness of networks as drivers of competitiveness for participating organisations. This perspective highlights the need to analyse governance through the lens of practices (Rese, Bulgacov, & Ferreira, 2015) to gain deeper insights into the role of governance within the network context.

When studies on networks are analysed, it becomes evident that their evolution reflects an increasingly dynamic and comprehensive perspective of the phenomenon. This broader perspective expands the focus of analysis—traditionally economic or strategic—towards an institutional view (Osborn & Hagedoorn, 1997).

The relevance of the environmental context in studies on strategy and organisations, along with the expansion towards an institutional perspective, has led to the fact that recent co-evolutionary research generally focuses on the co-evolution between organisations and their environment. However, the literature lacks studies addressing the relationship between firms and networks, among firms themselves, and between individuals within networks. Furthermore, when such relationships are discussed, most research prioritises theoretical approaches. This highlights the need not only for deeper theoretical exploration but also, and more importantly, for empirical studies on the subject.

This study integrates conceptual aspects from economic sociology (Granovetter, 1985), network governance in the context of practices (Rese, Bulgacov, & Ferreira, 2015), and the relational aspects involved (Nohria & Eccles, 1992), as well as the co-evolution between firms through the co-evolutionary approach (McKelvey, 1997; Lewin & Volberda, 1999).

Thus, this study aims to address the following research question: How does the relationship between co-evolution and network governance unfold, with a focus on configurational aspects and governance practices? Accordingly, the objective is to understand how interorganisational networks operate by analysing the microfoundations of the co-evolution between firms and between firms and the network throughout their transactional processes, as well as the control mechanisms that govern these relationships.

To achieve this, three national networks involving multiple actors (both affiliated and external organisations) were studied through case studies: (i) a cap manufacturing network comprising 638 affiliated companies and 23 external organisations; (ii) a children's footwear network consisting of 350 affiliates and six external organisations; and (iii) a software company network with 80 affiliated companies and three external organisations.

Thus, the study sought to explore the literature on networks, governance, and co-evolution from the perspective of social practices and processual exchanges. The novelty of this research lies in addressing this relationship through the processual analysis of transactions and the practices that influence them, leading to the co-evolution of firms within the network. In this regard, co-evolution is considered the objective to be achieved by the group when forming the network, aiming to meet the expectations created both by the network and by each firm during the arrangement's formation.

2 Theoretical Framework

2.1 Governance of Interorganisational Cooperation Networks

According to Provan and Kenis (2008), a network constitutes a form of organisation that can assume different configurations depending on the relationships within it. From this perspective, "the focus is not on networks as governance mechanisms, but on the governance and management of networks themselves" (Provan & Kenis, 2008, p. 233). Thus, a network as a whole has its own objectives, but it is also embedded in relationships between firms that individually pursue their own goals (Ashton, 2011).

With regard to configurational aspects, Albers (2010), in a study on alliance governance systems, identifies several contingency factors that influence the choice of governance and, in the present context, contribute to the differentiation of cooperation networks. These factors include: the size of participating firms, the group's experience, the size and scope of the arrangement, the degree of trust and uncertainty among members, the alliance's objectives, and the complexity and stability of the external environment.

In his study on conflicts between individual and collective goals in organisational networks, Winkler (2006) differentiates networks based on several factors: the year of foundation, the type of foundation (how the network emerged in terms of initiative), the level of government subsidy (high or low), the sector of participating firms, the number of firms within the network, the legal form of cooperation (cooperative, association, or other), the areas of cooperation, and the central position of coordination (external or internal).

For the purposes of this study, and in alignment with the concepts outlined above, network configuration refers to the aspects that define the profile, management, and relationships within a network. In this sense, it characterises the identity of the network and its main attributes, the way network management is organised to guide decisions regarding the acquisition and use of resources, as well as the nature of the relationships that comprise the network. These relationships are assessed in terms of the existence of prior connections, trust, agency, and degrees of formality.

Thus, network governance can be regarded as the highest authority within a network, guiding the decisions of organisational managers to sustain collective objectives (Castro & Gonçalves, 2014).

Wegner, Koetz, and Wilk (2012) associate governance with the structure and organisation of a network, such that the network adopts coordination mechanisms to ensure cooperation among actors for the enforcement of rules and the achievement of shared objectives. Thus, studies on network governance "seek to understand the institutional mechanisms through which interorganisational relationships are initiated, negotiated, designed, coordinated, monitored, adapted, and terminated" (Lopes & Baldi, 2009, p. 1017). Given the involvement of multiple actors, coordination becomes essential.

Albers (2010) further asserts that a governance system is characterised by its structure—centralisation, specialisation, and formalisation—and by the adoption of coordination, monitoring, and incentive mechanisms within the network. This observation highlights the importance of analysing these aspects to configure the structure and governance practices of a network, ensuring that formal and informal elements can coexist within its management.

In this context, discussing performance within networks involves not only participants' sense of satisfaction with the alliance but also the governance mechanisms adopted by the parties (Zollo, Reuer, & Singh, 2002), as these mechanisms influence the network's outcomes.

As Hovik and Stokke (2007), citing Schmitter (2002), assert, network governance relies on voluntary cooperation, making participants' positive perception of the achieved outcomes essential.

The term performance in this study follows the ideas of Lunnan and Haugland (2008, p. 546), who, when analysing alliance performance measures, state that it should "capture the survival of the alliance and the benefits delivered to partners over time." Accordingly, they identify three primary performance measures, with the present study adopting the third: financial, operational, and effectiveness. The latter, according to the authors, relates to the joint and individual achievement of the strategic objectives established throughout the evolution of the arrangement, highlighting the existence of both initial and emerging objectives. In terms of measurement, Lunnan and Haugland (2008) assert that performance assessment is generally based on participants' perceptions regarding whether their expectations have been met.

In summary, considering that the objective of the parties in entering a cooperation agreement is to meet the expectations established during the formation of the arrangement, and that the establishment of governance is essential to ensure the alignment of interests with those expectations, it is understood that network governance practices encompass both formal and informal elements. These elements guide participants' decisions throughout the processes of exchange and evolution, aiming to achieve collective objectives. In this sense, co-evolution becomes the group's primary goal, with the network's structure and governance directly influencing this outcome.

2.2 A (Co)-Evolutionary Perspective on the Network Phenomenon

Baum and Singh (1994, p. 380) state that "the objective of co-evolutionary inquiry is to understand how the structure of direct interactions and feedback within organisation-environment systems gives rise to their dynamic behaviour." The focus, therefore, is on understanding the relationships between the elements of a system and its dynamic nature. In the context of horizontal cooperation networks, this involves investigating the relationships between firms, networks, and the environment in terms of mutual influence and their impact on the functioning of the system as a whole (Koza & Lewin, 1998; Lewin, Long, & Carroll, 1999; Burgelman, 2003; Rodrigues & Child, 2009; Yip, Pate, Kim, Engelman, McDermott, & Gerstein, 2008).

Furthermore, for the study of network evolution, it is essential to understand the dynamics behind these arrangements—such as the reasons for their formation, their functioning, and their decline (Wegner, Koetz, & Wilk, 2012)—as well as the characteristics of the network over time, including its composition and the analysis of the relationships within it (Burger & Sydow, 2014). Thus, adopting a process perspective becomes essential for studying the topic (Powell, 2002; Ring & Van de Ven, 1994; Capaldo, 2014).

The processual and strategic perspective on the network phenomenon reinforces the constant need for aligning the interests of participants to achieve both individual and collective objectives (Semlinger, 2008; Provan & Kenis, 2008; Osarenkhoe, 2010). In addition, it emphasises the importance of encouraging participation, particularly from firms. As stated by Nascimento *et al*. (2023), when analyzing the competitive factors that influence the formation of cooperation networks, companies seek partnerships with a view to increasing their visibility in the market, as well as aligning complementary interests and prospecting new business. However, the relationship between companies in a cooperative arrangement still poses a significant challenge.

Participants tend to seek consensus through negotiation, which is often characterised by bargaining processes; as a result, the inputs and outcomes may be unequal (Ring & Van de Ven, 1994). Thus, the outcomes of cooperative arrangements represent gains (Oliver & Ebers, 1998), but these gains may be distributed unevenly among the parties. Consequently, the outcomes can be either positive (e.g., resource sharing and knowledge acquisition) or negative (e.g., increased costs), depending on the network's dynamics, management, and coordination.

Within this contingent and evolutionary context, Lewin, Long, and Carroll (1999) highlight that organisations, industries, and the environment engage in an interdependent relationship involving individual actions, competitive dynamics, and institutional forces, resulting in co-evolutionary processes.

The co-evolutionary approach, according to Lewin and Volberda (1999), reintegrates strategy and organisational theory, with an emphasis on the emergence of longitudinal studies of organisational adaptation, enabling a better understanding of the co-evolutionary aspects of the research object. In this sense, co-evolution considers the existence of mutual influence between agents (Burgelman, 2003), such that changes in one agent impact the other and vice versa (Yip et al., 2008). Originating from research on adaptation and selection, this approach addresses the mutual influence between organisations and their environment. Co-evolution applies both at the macro level—considering the relationship between firms and their environment—and at the micro level—focusing on "intrafirm" relationships (McKelvey, 1997; Lewin & Volberda, 1999). However, it always adopts a perspective of recursive evolution between the institutional and extra-institutional environments and the firm (Rodrigues & Child, 2009), mediated by "managerial action, strategic intent, adaptation, performance attainment by each firm, as well as by the competitive dynamics shaped by the behaviour of firms within the sector" (Rodrigues & Child, 2009, p. 17).

In general, Lewin, Long, and Carroll (1999, p. 535) assert that co-evolutionary theory envisions the interdependence between organisations, populations, and their environments with respect to strategic actions and both institutional and extra-institutional environments. Ter Wal and Boschma (2011) highlight the importance of studies that address co-evolutionary aspects considering the network's life cycle. According to the authors, networks co-evolve with the industry to which they belong, as well as with the network's knowledge base and the capabilities of participating firms. Thus, firms, networks, industries, and society influence one another in their pursuit of common objectives, underscoring the importance of trust among the parties involved in this process (Koza & Lewin, 1998).

It is noted that, while proposing a co-evolutionary analysis among firms within the network, this research also explored the co-evolutionary relationship between firms and the network itself to understand the configurational influence of the network and its governance on this type of co-evolution, particularly regarding the achievement of desired and actual outcomes by both the arrangement and the firms. The study by Ter Wal and Boschma (2011), which closely aligns with this approach, sought to investigate the co-evolution of the network in relation to the capabilities of participating firms. According to the authors, "at the firm level, heterogeneity in capabilities accounts for divergent models of firm positioning within the network and, consequently, firm performance" (Ter Wal & Boschma, 2011, p. 929). This study, therefore, aimed to go beyond that relationship by investigating how specific network characteristics impact this co-evolution.

Roth and Cointet (2010), in a study on co-evolution between networks (socio-semantic networks and social networks), discuss the topic, being among the few studies that address co-evolution at the same level of analysis. The authors sought to understand the interactions

between the two networks under investigation, as well as the micro and macro-organisational aspects involved in this relationship.

Thus, based on the literature on the topic and the principles of this study, co-evolution is considered the expected outcome of a collaborative network process. It involves mutual influence among participants, as well as between participants and the network, with respect to the social and economic aspects that shape this relationship.

In general, studies on co-evolution consider the symbiotic aspects observed in the relationship between organisations and their environment. This is exemplified in the study by Rodrigues and Child (2009), in which the authors examine corporate co-evolution by addressing the political aspects evident in the relationship between a telecommunications company (Telemig) and the external environment—a study similar to that conducted by Burgelman (2003) with the case of Intel.

It is noted that the environmental context (Ménard, 2004) and the institutional context (Perrow, 1993) that shape the actions of agents impose contingencies on the network, either promoting or restricting its development and that of the participating firms (McKelvey, 1997). This highlights that the gains, as well as the losses, resulting from cooperative relationships are not equally distributed among the parties involved in the process.

In co-evolution, organisations, populations, and the environment emerge from the dynamics between environmental aspects, institutional influences, and managerial actions (Lewin & Volberda, 1999). This makes management practices an interesting field of analysis for gaining a deeper understanding of the co-evolutionary phenomenon, as in the case of this study, which sought to investigate the role of network structure and governance within the co-evolutionary dynamics of firms.

In this context, it is considered that a network requires governance practices capable of ensuring the complementarity of individual and group interests (Jones, Hesterly, Fladmoe-Lindquist, & Borgatti, 1998) and, thus, meeting the expectations of the firms participating in the network.

3 Methodology

The present research model assumes that, within a network environment, firms engage in diverse transactional processes mediated by the network's configuration and governance practices. Throughout the evolution of the cooperative arrangement, firms co-evolve both with one another and with the network in terms of economic and social aspects, based on the outcomes achieved over the course of their relationships. In this context, the relationship between the network's configuration and its governance practices plays a fundamental role in the co-evolutionary process, aiming to create value for both the firms and the network.

Building on the principles of Economic Sociology, this research follows an inductive and processual approach, as opposed to the abstract and formal analysis of classical economics (Steiner, 2006). Thus, through the study of the phenomenon, it examines the various relationships that constitute it, focusing on their particularities, while aiming to contribute to its generalisation. Comparison and the reduction of potential value judgements (which may characterise this type of research) are addressed through the use of data from multiple sources and different data collection methods (Strauss & Corbin, 2008).

The study is thus based on the analysis of processes which, according to Oliver and Ebers (1998), involve the management and coordination of the network throughout its evolution. In this context, it also addresses the analysis of outcomes (Oliver & Ebers, 1998), focusing on the co-evolutionary effects that firms may achieve through transactions carried out

during the network's development. This brings a process-oriented perspective to the economic transactions involved (transactional processes).

The initial stage of the study involved a preliminary investigation of the population to identify cases that best aligned with the research topic and where access was feasible. The selection of the networks, which are the objects of analysis in this study, followed a purposeful and convenience sampling approach, resulting in a better understanding of the phenomenon in relation to the research question presented (Creswell, 2010). Accordingly, the study focused on interorganisational cooperation networks aligned with the concept proposed by Lastres and Cassiolato (2003, pp. 3-6): "a territorial agglomeration of economic, political, and social agents—focusing on a specific set of economic activities—that exhibit links [participation and interaction], even if incipient." In addition, certain conditions were important for case selection: (i) Location: the influence of external environmental factors on the network (industry, institutional and extra-institutional environments); (ii) Actors: the existence of cooperative relationships between the network's actors; (iii) Events: the occurrence of transactional events and governance practices since the network's formation; (iv) Process: identification of the network's lifespan and prior analysis of its evolutionary trajectory; (v) Co-evolution: verification of co-evolutionary aspects within the network (Lewin, Long, & Carroll, 1999; Miles & Huberman, 2004).

From this point, three distinct cases were selected for analysis: a network in the cap manufacturing sector (located in the interior of Paraná), a network in the children's footwear manufacturing sector (located in the interior of São Paulo), and a network in the software development sector (also located in the interior of São Paulo). The selection of these cases was further based on the differentiation of the arrangements in terms of governance structure as well as the impact of the network's actions on regional and sectoral development.

Following the evolutionary approach, with the aim of investigating transactional processes throughout the network's life cycle, this research is characterised as cross-sectional with a longitudinal focus. This choice was primarily influenced by the time available to conduct the study, which represented a limitation. However, this constraint was managed throughout the data collection process by investigating various sources of information (observations, interviews, documents, and bibliographies), which made it possible to recover past events. The lack of systematised information from the networks under study also posed a challenge for this research.

Data collection involved asymmetric observations (primarily during governance meetings, as well as at the headquarters of the networks and participating companies), interviews, and documentary and bibliographic analysis. In total, 36 interviews were conducted, along with the analysis of 806 documents provided for the research (including meeting minutes, newsletters, media coverage, development plans, various reports, and other relevant materials). Additionally, 62 pages of asymmetric observations were recorded during fieldwork, enabling the triangulation of information to enhance the study's internal validity.

As a complement, and to describe and understand the research context under analysis, additional data were collected through news articles about the networks and interviews with key actors involved. These data focused on the sector's dynamics concerning its historical evolution, the role of the government and other actors in providing incentives and support for the formation of cooperation networks, as well as competitive and regulatory aspects.

The aim is to understand the industry as well as the institutional and extra-institutional environments, which are essential for a deeper comprehension of the co-evolutionary effects in

interorganisational cooperation networks. This is because the characteristics of environmental dynamics are fundamental to studies employing this approach.

To better systematise the findings and support the content analysis, the ATLAS.ti software was used, facilitating the organisation of excerpts and categories of analysis. The presentation of the results was achieved by comparing the research model with the analyses conducted and the findings with the theory, aiming to verify the study's contribution to existing theory and to conclude the research based on the identified theoretical saturation.

4 Results and Discussion

This section discusses the results of the study based on the following categories of analysis: network configuration, network evolution, network governance configuration, key transactional processes within the network, and co-evolution analysis and its relationships.

For a better understanding of the cases studied, as well as the networks' configuration, Table 1 presents a summary of the characterisation of the cooperation networks, organised by profile, management, and relationships.

Table 1

Summary: structural configurations of arrangements

		Cap Manufacturing Network	**Children's Footwear Network**	**Software Development Network**
PROFILE	Year of Foundation (Formalisation)	2004	2006	2011
	Type of Foundation	Initiative by Sebrae	Trade union initiative, in partnership with Sebrae and the State Department	University initiative
	Purposes of Network Formation	Stimulating the development of the cap sector in Apucarana through: competitiveness, entrepreneurial spirit, business sustainability, and the inclusion of companies in national development programmes.	Possibility of financial subsidies; improvement in competitiveness and productivity of businesses; increased bargaining power of smaller industries with buyers.	Retention of labour; pursuit of sectoral specialisation; establishment of university education in the region; search for subsidies for regional development.
	Areas of Cooperation	Management and promotion; education; events; market; visits; environment.	Management and promotion; education; events; market; visits.	Management and promotion; education; events; market; visits.
	Number of Participating Firms	638 textile and apparel industries (35 actively participating in APL activities)	Approximately 350 companies	Approximately 80 companies (estimated values, no studies available on the sector in the region).
	Types of Participating Firms	Cap manufacturers and actors within the cap production chain, such as raw material and equipment suppliers.	Footwear industries and companies involved in the production chain	Software development
	Number of Other Actors Involved	Approximately 23	Approximately 6	Approximately 3

	Types of Other Actors Involved	Municipal government; "S System" institutions; universities; professional associations; research institutes; state and federal governments.	Municipal government; "S System" institutions; employers' union; workers' union.	Municipal government; Sebrae; universities.
	Characteristics of the External Environment	Highly informal sector; significant influence of the Asian market and piracy; limited economic and fiscal incentives; incipient cooperative actions compared to the total number of companies in the cluster; lack of unity and adherence among business owners; issues with labour qualification and worker behaviour.	Concentration of footwear manufacturing companies; financial crisis (heavily impacted sector); threat from the Chinese market; limited resources; lack of government support.	Growing technology sector; high-quality workforce training in the city, attracting external companies to recruit local professionals; local companies struggling to retain their workforce.
MANAGEMENT	Type of Network Governance	*Participant-governed*	*Lead organization- governed network*	*Network administrative organization*
	Actors Involved in Governance	Business owners, associations, universities, Sebrae, unions, and the municipal government.	Sebrae; Senai; employers' union (approximately 22 businesses owners and directors).	Companies from PoloIn
	Group Maturity in Terms of Collaborative Work and Relationships	Governance: Presence of an active group since the formation of the APL; Sector: Previous collective purchasing actions, as well as loans and exchanges of materials and equipment.	Since the formation of the APL, evolving with changes in the union's leadership; need for changes and a new approach.	Since the formation of the APL, gradually developing over time.
RELATIONSHIPS	Characteristics of Relationships	Presence of agency power; informality in the sector, governance structure, and daily business activities; importance of experience in pursuing regional development.	Agency power of the union; experience and expertise of the union's leadership; sector informality; emergence of new relationship opportunities.	Informality in the sector; gradual strengthening over time; respect among competitors.

Source: Prepared by the authors

The processual perspective in the analysis of networks (Powell, 2002; Ring & Van de Ven, 1994; Burger & Sydow, 2014; Capaldo, 2014) was essential for understanding their evolution in terms of relationships, transactions, and co-evolutionary aspects.

The characterisation of **network evolution**, therefore, generally follows a processual cycle that begins with verifying the interest of business owners in participating in the arrangement through negotiation processes. This is followed by commitment, with activity planning based on the needs identified by the groups. Next comes the execution of actions, accompanied by frequent monitoring to ensure the achievement of objectives. The evaluation of actions and verification of continuity occur through regular oversight by the network's governance, maintaining direct contact with participants.

Convergent with these stages is the constant alignment of interests and incentives, as networks often involve multiple agents with individual interests. However, to promote regional

development, they must establish shared objectives. It is the role of governance to create mechanisms that encourage participation and ensure the fulfilment of responsibilities.

Complementary to the processual cycle model of an interorganisational network, it is observed that in the cases studied, the main actors in the network are consistently concerned with the legitimacy of their actions within the institutional environment in which they operate. This legitimacy may arise from the environment itself or from the network's initiatives. This concern is reflected in the groups' perceived need to promote their actions and seek support for their execution. Institutional support, in this context, becomes essential—without it, companies' interest in participating might not be as significant, and the arrangements might struggle to evolve. This finding reinforces the importance of institutional analysis in network studies (Steiner, 2006; Balestrin, Verschoore, & Perucia, 2014; Yoon & Hyun, 2010).

Thus, it is observed that the evolution of networks tends to align with sectoral characteristics, which are currently described as highly challenging given the country's economic and political instability. Consequently, in arrangements such as the cap and children's footwear networks, a more intense movement towards value creation through design and innovation is emerging as an alternative for the future of these businesses.

It can be stated that the **network configurations** in terms of structure follow the same pattern. The governance models adopted by the groups align with the profile of an interorganisational cooperation network in terms of origin, areas of cooperation, external environmental aspects, and the number of participating companies and supporting entities (Albers, 2010). The same applies to relationships which, over the course of the network's evolution, become closer, fostering greater respect among the participating companies and building trust among those more actively involved in the group's actions, particularly the governance members.

Trust among participants, therefore, tends to evolve as the network develops, especially among companies that actively engage in the network's activities. The interactions facilitated by the arrangement foster a level of trust that becomes crucial for achieving objectives and ensuring commitment to the network's mission.

An important aspect in this context is the potential agency power held by certain participants based on their role in the initial efforts to establish the arrangements, particularly during the early stages. In the case of the cap manufacturing network, Sebrae played a key role; in the children's footwear network, it was the employers' union; and in the software network, a university took the lead. Throughout the document analysis and interviews, this influence becomes evident in the way it shapes the network's actions and aligns the interests of the involved agents.

The existence of prior relationships is a reality in all three arrangements studied, both formal (such as the creation of purchasing associations) and informal (such as the lending of materials and equipment, as well as friendships). However, in all cases, the formation of the network has contributed to strengthening these relationships and fostering new connections among the actors, reaffirming the importance of social relationships in this type of organisational model (Balestrin, Verschoore, & Perucia, 2014; Yoon & Hyun, 2010).

The immediate demands of the industry versus the slow pace of processes is also a relevant aspect in the analysis of networks, as it directly impacts group motivation. This requires governance to frequently seek ways to incentivise participation. Another factor affecting the network's motivation is the discontinuity of programmes and actions, especially those reliant on external support, such as from the government or Sebrae, on which the networks are significantly dependent. Thus, policy changes can either facilitate or hinder the execution and monitoring of activities, ultimately affecting the achievement of objectives. In this context,

effective communication becomes essential—both among agents within an arrangement and across different types of arrangements—to enhance bargaining power in relation to class interests and sectoral public policies.

The networks' actions are thus guided by their governance, which establishes the normative aspects governing the groups' activities. In addition, governance ensures the convergence of participants' interests, manages information and conflicts, and mediates negotiations. It is noted that the alignment of individual, organisational, and collective objectives is essential for participants to feel satisfied and motivated to engage in the network.

For analytical purposes, **the configuration of governance practices** in the networks under study followed these criteria: the manner in which activities are conducted, the distribution of responsibilities, the monitoring methods, the allocation of authority, and the verification of incentives.

In this context, governance practices are adapted to the reality of each arrangement, influenced by individuals with longer involvement or greater experience, as well as by the central organisations within the arrangements, such as unions and associations. This results in shared governance in the cases of the children's footwear and software networks. This dynamic reflects the difficulty in distinguishing between issues belonging to the union or association and those specific to the network. Additionally, many business owners participating in the network are often unaware of the network's specific actions, attributing them instead to the union or association to which they belong. It is also observed that "heuristics" emerge regarding the distribution of responsibilities and tasks. While the initial phases of network activities involve clear role assignments through the formation of groups and working committees, over time, a natural adjustment takes place. This adjustment is shaped by the interests, contributions, or even the formal roles of individuals, particularly in networks with shared governance.

Regarding network governance mechanisms, both formal and informal mechanisms are observed. Formal mechanisms include the recording of network activities and meetings (through minutes), various planning documents, and the establishment of participant conduct guidelines. Informal mechanisms arise from social relationships, such as communication via social media, personal interactions, and the exchange of information among governance members.

It is important to highlight that all participants in the networks are considered essential, and authority is well distributed across the governance structures. However, as mentioned earlier, it is possible to identify the agency power of certain participants, such as Sebrae in the cap manufacturing network, the union in the children's footwear network, and the university in the software network.

Finally, with regard to incentives, representativeness stands out as a key factor in the cap manufacturing network; union incentives are prominent in the children's footwear network; and associative incentives play a central role in the software network. Although these incentives were identified, it was observed in the latter two cases that the governance structures recognised the importance of implementing changes to better align participants' interests with the networks' objectives.

The adjustment and reconfiguration of governance structures are common across the three arrangements studied, often driven by changes in government policies or support institutions (such as the S System), both of which are highly significant for the networks. Discontinuity in public policies directly affects the activities of these arrangements, which in turn influences the participation of companies. High turnover of organisations and individuals within the networks negatively impacts activities and the alignment of information. It was also

observed that the networks face challenges related to information management. In many cases, key information is concentrated in one or a few individuals who regularly follow network activities but are not always part of the governance structure, such as assistants and secretaries.

These changes also affect the **transactional processes** within the networks, which, in line with Steiner's (2006) framework, begin with identifying the group's expectations (expected outcomes). This is followed by collaborative work, the establishment of social and relational rules, and the management of potential conflicts. Finally, the process concludes with an evaluation of the results in relation to the predefined objectives, whether collective or individual, as well as a decision on whether to continue or terminate the transaction. There are periods when numerous transactions occur, typically when there is strong political support, and more stable periods when networks await the outcome of a project or action or depend on greater engagement from business owners. The slowness of transactional processes directly impacts company participation, and it is the responsibility of governance to increase transactional value throughout these interactions (Zajac & Olsen, 1993), aligning them with the expectations of the participating companies.

Thus, in line with the processual analysis of network evolution by Ring and Van de Ven (1994), it is possible to identify inequalities in inputs and outputs within the networks. These inequalities reflect the role of structural configurations and governance practices as mediators of this relationship, which can either enhance or limit the returns achieved.

The interdependence between companies and between companies and the network is more pronounced in the cases studied, particularly in terms of social interdependence. In the network context, heterogeneity, interdependence, and economic and social exchanges are key drivers for the formation of the network (Osarenkhoe, 2010). The main social exchanges involve the sharing of knowledge, experiences, and contacts, while the primary economic exchanges include cost-sharing and cost reduction.

In terms of **co-evolution**, both types of exchanges are present. The greater the number of companies participating in an action, the more costs are shared, leading to a corresponding reduction in transaction costs. On the other hand, networks offer opportunities for social exchanges among participants. The more information is shared, the greater the opportunities for improvement and growth, as companies can serve as models for one another, encouraging them to rethink their business practices and move beyond their "comfort zones." Thus, there is both economic and social interdependence among the companies participating in the network.

Complementarily, the more companies evolve, the greater the overall evolution of the network tends to be. Similarly, as the network advances in achieving collective results, the participating companies also tend to evolve, as they gain access to benefits that might not have been available without the organisation of the arrangement.

Co-evolution is thus evident both among companies and between companies and the network, although it occurs at varying levels depending on the types of agents involved, their participation, the results achieved, and the impact generated. In terms of types of agents, co-evolution can be analysed through relationships and exchanges between companies, between companies and support entities, between support entities themselves, and between networks. Regarding agent participation, co-evolution is more significant among those who are more actively involved in the network's actions. However, even those with limited participation tend to evolve, albeit at a lower level of co-evolution. With respect to the desired and achieved outcomes, both economic and social aspects can be observed.

Finally, the analysis of the cases suggests that within the network context, "negative co-evolution" can also occur. This refers to situations where the opportunistic behaviour of one agent can harm the network as a whole, as well as other companies connected to it.

Complementarily, the perception of interdependence in actions fosters an awareness of a synergistic effect, strengthening the group and facilitating the achievement of common objectives, which in turn impacts co-evolution. In the context of interorganisational cooperation networks, a systemic view is essential, considering the evolution of the entire sector. According to one interviewee, this is the greatest benefit achieved. However, cultural barriers must be overcome, and governance plays a key role in this process. It is necessary for business owners to recognise that partnerships are an essential means of gaining competitive advantage. However, there is still a need for greater focus on network management in this regard.

It is evident that within the context of interorganisational relationships, particularly in the cases studied, once the network is established and actions are implemented to promote sectoral and regional development, there is a tendency for all companies within the network to evolve. However, this evolution does not occur at the same level, as larger companies are generally better structured and possess greater investment capacity. Given these differences, it is not feasible to adopt uniform actions, as the realities of the companies vary. On the other hand, companies that participate less miss out on access to information, experiences, and knowledge that would be essential for the development of their business. As a result, it becomes difficult for these companies to evolve at the same pace as those that are more active and take advantage of the opportunities provided by the arrangement.

It also seems possible to suggest that the very perception of interdependence among companies encourages networks to leverage this dynamic to achieve their collective objectives. This is particularly evident in efforts to attract new companies to the arrangement and in the direct involvement with certain companies that serve as anchors or models for the others.

An interesting aspect observed from the interviews is the need for an entire ecosystem to work collectively towards regional development. While interdependence exists and plays a crucial role in co-evolution, it requires continuous monitoring to ensure alignment with the development of the companies. In this sense, despite providing significant benefits to participating companies, interorganizational relationships still pose a challenge for cooperative arrangements (Nascimento *et al*., 2023).

Finally, the influence of the network's configuration and its governance practices on the co-evolution of firms and the network becomes evident, as these elements also shape the nature of relationships and transactional processes within the arrangement. This structure fosters an environment of trust and respect while facilitating the alignment of interests among the parties involved, whether companies or support entities. Co-evolution, as a desired outcome of cooperation, requires encouragement and alignment of interests to promote sectoral and regional development. This process is influenced by both institutional and extra-institutional mechanisms.

The theoretical contribution of this study lies in the understanding of the economic and social relationships among organisations arranged in a network, with a focus on the analysis of interdependence and microdynamics (McKelvey, 1997; Lewin & Volberda, 1999; Teck-Yong, 2007; Rodrigues & Child, 2009). In this context, co-evolution represents an objective to be achieved by the network through its practices throughout its transactional processes.

5 Conclusion

This study aimed to investigate the economic and social aspects involved in the establishment of interorganisational cooperation networks, using a co-evolutionary approach as its foundation. The research sought to understand the relationship between co-evolution and

network configuration, focusing on its structure and governance practices, with particular attention to the interactions both among companies and between companies and the network.

Co-evolution is evident in the networks analysed, encompassing both economic and social aspects. The cooperative actions facilitated by the arrangement contribute to transaction cost reduction, while the exchange of information throughout the activities encourages companies to rethink their business strategies and implement improvements. In this context, interdependence among agents—whether between companies, between companies and entities, or between entities themselves—is seen as a key driver for regional development. However, different levels of co-evolution are observed depending on the degree of participation by the companies. Firms with active involvement in the network tend to achieve higher levels of co-evolution compared to those with limited participation. Nonetheless, even the less active companies benefit from co-evolution, as they also gain indirect advantages from the network's activities targeting the sector, such as tax reductions and promotional efforts.

The analysis of the influence of the relationship between network configuration and its governance practices on co-evolution reveals that the network's profile and its relationships align with the governance practices adopted. These practices, in turn, guide actions that foster co-evolution, taking into account the internal and external contexts specific to each arrangement. Governance plays a fundamental role in ensuring transparency and publicising the interests underlying cooperative relationships. The level of agent participation within the network is closely related to the extent to which participants perceive their interests as being met. In this regard, trust emerges from this perception of interest alignment and the duration of relationships among participants, encouraging both formal and informal cooperative actions.

This study does not aim to exhaust discussions on the topic but seeks to offer insights into the processes and relationships within networks. It aimed to contribute to the understanding of governance and co-evolution in interorganisational cooperation networks through an in-depth analysis of real-world contexts. As a proposal for future research, the following aspects are suggested for further exploration:

- The role of governance and its practices as a phenomenon that still requires further attention, especially regarding the similarities and differences between networks and the potential existence of shared governance among agents;
- Informality in network relationships as an influential and relevant factor, which could be a focus for further theoretical exploration, particularly to analyse its relationship with various aspects of interorganisational networks;
- The analysis of public policies related to interorganisational cooperation networks and their impact on the various processes that constitute these arrangements, focusing on compliance with deadlines, the availability of incentives, programme continuity, and the use of resources acquired by the networks;
- Further analysis of the microfoundations of co-evolution, with a focus on relationships between companies and support entities, as well as relationships among support entities and between networks;
- Analyses of companies' active participation in the arrangements, as this remains a challenge, along with cooperation that goes beyond what may be considered trivial according to the existing literature on the subject.

References

Albers, S. (2010). Configurations of alliance governance systems. *Schmalenbach Business Review*, 62, 204-233.

Ashton, W. S. (2011). Managing performance expectations of industrial symbiosis. *Business strategy and the environment*, 20(5), 297-309.

Balestrin, A., Verschoore, J. R., & Perucia, A. (2014). A visão relacional da estratégia: evidências empíricas em redes de cooperação empresarial. *Revista Base (Administração e Contabilidade) da UNISINOS*, 11(1), 47-58.

Baum, J. A., & Singh, J. V. (Eds.). (1994). *Evolutionary dynamics of organizations*. Oxford University Press.

Burgelman, R. A. (2003). *Strategy making and evolutionary organization theory: Insights from longitudinal process research* (No. 1844).

Burger, M., & Sydow, J. (2014). How interorganizational networks can become path-dependent: Bargaining practices in the photonics industry. *Schmalenbach Business Review*, 66, 73-99.

Capaldo, A. (2014). Network governance: A cross-level study of social mechanisms, knowledge benefits, and strategic outcomes in joint-design alliances. *Industrial Marketing Management*, 43(4), 685-703.

Castro, M. D., & Gonçalves, S. A. (2014). Contexto institucional de referência e governança de redes: estudo em arranjos produtivos locais do estado do Paraná. *Revista de Administração Pública*, 48, 1281-1304.

Creswell, J. W. (2010). *Projeto de pesquisa: Métodos qualitativo, quantitativo e misto*. Artmed Editora.

Granovetter, M. (1985). Economic action and social structure: The problem of embeddedness. *American journal of sociology*, 91(3), 481-510.

Hovik, S., & Stokke, K. B. (2007). Network governance and policy integration—the case of regional coastal zone planning in Norway. *European Planning Studies*, 15(7), 927-944.

Jarillo, J. C. (1988). On strategic networks. *Strategic management journal*, 9(1), 31-41.

Jones, C., Hesterly, W. S., Fladmoe-Lindquist, K., & Borgatti, S. P. (1998). Professional service constellations: How strategies and capabilities influence collaborative stability and change. *Organization Science*, 9(3), 396-410.

Koza, M. P., & Lewin, A. Y. (1998). The co-evolution of strategic alliances. *Organization science*, 9(3), 255-264.

Lastres, H. M. M., & Cassiolato, J. E. (2003). Glossário de arranjos e sistemas produtivos e inovativos locais. Rede de Pesquisa em Sistemas Produtivos e Inovativos Locais – RedeSist. Recuperado de http://portalapl.ibict.br/export/sites/apl/galerias/arquivos_noticias/glossario.pdf.

Lewin, A. Y., Long, C. P., & Carroll, T. N. (1999). The coevolution of new organizational forms. *Organization science*, 10(5), 535-550.

Lewin, A. Y., & Volberda, H. W. (1999). Prolegomena on coevolution: A framework for research on strategy and new organizational forms. *Organization science*, 10(5), 519-534.

Lopes, F. D., & Baldi, M. (2009). Redes como perspectiva de análise e como estrutura de governança: uma análise das diferentes contribuições. *Revista de Administração Pública*, 43, 1007-1035.

Lunnan, R., & Haugland, S. A. (2008). Predicting and measuring alliance performance: A multidimensional analysis. *Strategic management journal*, 29(5), 545-556.

McKelvey, B. (1997). Perspective—Quasi-natural organization science. *Organization science*, 8(4), 351-380.

Ménard, C. (2004). The economics of hybrid organizations. *Journal of Institutional and Theoretical Economics (JITE)/Zeitschrift für die gesamte Staatswissenschaft*, 345-376.

Miles, M. B., & Huberman, A. M. (1984). *Qualitative data analysis: A sourcebook of new methods*. In Qualitative data analysis: a sourcebook of new methods (pp. 263-263).

Nascimento, E. A. do, Silva, R. S., Gaspar, M. A., Meyer. L. M. (2023). Cooperation networks: competitive motivators in training, facilitators and hindrances to interorganizational relationships. *Gestão & Regionalidade*, 39, 1-17.

Nohria, N., Eccles, R. G., & Press, H. B. (Eds.). (1992). *Networks and organizations: Structure, form, and action* (Vol. 367). Boston: Harvard business school press.

Oliver, A. L., & Ebers, M. (1998). Networking network studies: an analysis of conceptual configurations in the study of inter-organizational relationships. *Organization studies*, 19(4), 549-583.

Osarenkhoe, A. (2010). A study of inter-firm dynamics between competition and cooperation–A coopetition strategy. *Journal of Database Marketing & Customer Strategy Management*, 17, 201-221.

Osborn, R. N., & Hagedoorn, J. (1997). The institutionalization and evolutionary dynamics of interorganizational alliances and networks. *Academy of Management Journal*, 40(2), 261-278.

Park, S. H. (1996). Managing an interorganizational network: a framework of the institutional mechanism for network control. *Organization studies*, 17(5), 795-824.

Perrow, C. (1993). Small firm networks. *Explorations in economic sociology*, 377-402.

Powell, W. W. (2002). NEITHER MARKET NOR HIERARCHY Network forms of organization. *Strategy: Critical Perspectives on Business and Management*, 4, 119.

Provan, K. G., & Kenis, P. (2008). Modes of network governance: Structure, management, and effectiveness. *Journal of public administration research and theory*, 18(2), 229-252.

Rese, N., Bulgacov, S., & Ferreira, J. M. (2015). GOVERNANCE AS PRACTICE: Contributions to the Concept of Governance from the Perspective of Social Practice. *Business and Management Review*, 4(7).

Ring, P. S., & Van de Ven, A. H. (1994). Developmental processes of cooperative interorganizational relationships. *Academy of management review*, 19(1), 90-118.

Rodrigues, S. B., & Child, J. (2009). *Corporate co-evolution: a political perspective*. John Wiley & Sons.

Roth, C., & Cointet, J. P. (2010). Social and semantic coevolution in knowledge networks. *Social Networks*, 32(1), 16-29.

Semlinger, K. (2008). Cooperation and competition in network governance: regional networks in a globalised economy. *Entrepreneurship and regional development*, 20(6), 547-560.

Steiner, P. (2006). A *sociologia econômica*. São Paulo: Atlas.

Strauss, A. L., & Corbin, J. (2008). *Pesquisa qualitativa: técnicas e procedimentos para o desenvolvimento de teoria fundamentada*. Artmed.

Teck-Yong, E (2007). Relationship value of firms in alliance capitalism and implications for FDI. International *Journal of Business Studies: A Publication of the Faculty of Business Administration*, Edith Cowan University, 15(1), 43-68.

Ter Wal, A. L., & Boschma, R. (2011). Co-evolution of firms, industries and networks in space. *Regional studies*, 45(7), 919-933.

Wegner, D., Koetz, C. I., & Wilk, E. D. O. (2012). A influência da governança formal de redes interorganizacionais (RIOs) no desempenho das empresas participantes. *Anais do Encontro da Associação Nacional de Pós-graduação e Pesquisas em Administração-ENANPAD*.

Winkler, I. (2006). Network governance between individual and collective goals: Qualitative evidence from six networks. *Journal of Leadership & Organizational Studies*, 12(3), 119-134.

Yip, K. Y., Patel, P., Kim, P. M., Engelman, D. M., McDermott, D., & Gerstein, M. (2008). An integrated system for studying residue coevolution in proteins. *Bioinformatics*, 24(2), 290-292.

Yoon, W., & Hyun, E. (2010). Economic, social and institutional conditions of network governance: Network governance in East Asia. *Management Decision*, 48(8), 1212-1229.

Zollo, M., Reuer, J. J., & Singh, H. (2002). Interorganizational routines and performance in strategic alliances. *Organization science*, 13(6), 701-713.