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Framework of the process of formation and development of interorganizational networks

Framework do Processo de Formação e Desenvolvimento de Redes Interorganizacionais

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Abstract: This study is a theoretical essay that presents a theoretical framework for forming and developing interorganizational networks, integrating economic and social dimensions, and emphasising the critical role of institutions in emerging markets. By drawing on the foundational theories of Grandori and Soda (1995), Jones et al. (1997), and Larson and Starr (1993), the research examines network formation, coordination mechanisms, and governance structures. Practical examples from both developed and emerging markets are used to highlight how institutional support fosters network evolution. Key findings reveal that interorganizational networks in emerging markets heavily depend on institutions to overcome structural challenges, promote collaborative innovation, and reduce opportunistic behaviours. Mechanisms such as reputation systems and social sanctions are central to ensuring long-term sustainability. The proposed framework contributes significantly to the literature by focusing on emerging markets, a context often underexplored in studies of interorganizational networks. It provides actionable insights for managers and policymakers, offering guidance on leveraging institutions to strengthen network collaboration and promote sustainable development. By addressing resource constraints and unique challenges, the study enhances understanding of network dynamics and their role in driving social inclusion and regional competitiveness.

Keywords: Interorganizational Networks. Formation of Business Networks. Development of Business Networks.

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Resumo: Este ensaio teórico apresenta um modelo teórico para a formação e o desenvolvimento de redes interorganizacionais, integrando dimensões econômicas e sociais e destacando o papel essencial das instituições em mercados emergentes. Com base nas teorias fundamentais de Grandori e Soda (1995), Jones et al. (1997) e Larson e Starr (1993), a pesquisa examina a formação de redes, os mecanismos de coordenação e as estruturas de governança. Exemplos práticos de mercados desenvolvidos e emergentes são utilizados para demonstrar como o suporte institucional promove a evolução das redes. Os principais resultados revelam que redes interorganizacionais em mercados emergentes dependem fortemente de instituições para superar desafios estruturais, promover inovação colaborativa e reduzir comportamentos oportunistas. Mecanismos como sistemas de reputação e sanções sociais são centrais para garantir a sustentabilidade a longo prazo. O modelo proposto contribui significativamente para a literatura ao focar em mercados emergentes, um contexto frequentemente pouco explorado nos estudos sobre redes interorganizacionais. Ele oferece insights práticos para gestores e formuladores de políticas, fornecendo orientações sobre como alavancar instituições para fortalecer a colaboração em redes e promover o desenvolvimento sustentável. Ao abordar restrições de recursos e desafios únicos, o estudo amplia a compreensão da dinâmica das redes e de seu papel na promoção da inclusão social e da competitividade regional.

Palavras-chave: Redes Interorganizacionais. Formação de Redes Empresariais. Desenvolvimento de Redes Empresariais.

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1 Introduction

The study of inter-organisational networks has gained increasing relevance over the past decades, mainly due to their crucial role in strengthening competitiveness and promoting innovation among small and medium-sized enterprises (SMES). These networks offer a combination of resources and capabilities inaccessible to many organisations (Jarillo, 1988; Maurer et al., 2011). Moreover, with the growing complexity and dynamism of global markets, networks have proven essential for the survival and growth of firms across various sectors (Sousa et al., 2022). The literature has emphasised the benefits of networks, such as increased market power, collaboration for innovation, and risk mitigation (Gulati et al., 2012; Freire et al., 2022).

However, despite the broad recognition of network benefits, the underlying processes of forming, developing, and consolidating these inter-organisational relationships remain insufficiently explored (Balestrin & Verschoore, 2016; Caloffi et al., 2015). There is a clear gap in the literature regarding how networks are structured and managed over time and how economic and social factors shape these dynamics. Specifically, there is a need for a deeper understanding of the governance and coordination mechanisms that support successful networks and the challenges these networks face, such as opportunism and managerial complexity (Powell et al., 1996; Wegner & Padula, 2012).

The current literature also highlights the importance of institutions in supporting network development, acting as facilitators of resources and promoters of policies that encourage cooperation between firms (Antunes et al., 2019; Scott, 2008). This role is even more critical in emerging markets, as companies face more significant structural barriers to collaboration and innovation (Ivens et al., 2016; Freire et al., 2022).

This theoretical essay seeks to contribute to the field by proposing a framework integrating rational and social variables into forming and developing inter-organisational networks. The central aim is to explore how these networks are formed and structured and which coordination and governance mechanisms are fundamental to their long-term success. The key benefits and challenges associated with network participation will be addressed, focusing on institutions' role and contextual factors' influence in emerging markets.

Despite advances in the literature on inter organizational networks, a significant gap remains in understanding the processes that underpin their formation, development, and consolidation, particularly in emerging market contexts (Caloffi et al., 2015; Balestrin & Verschoore, 2016). Most studies focus on institutionally stable environments, overlooking the structural and relational conditions characterizing economies marked by high volatility, inequality, and resource scarcity (Khanna & Palepu, 2010; Ahlstrom & Bruton, 2006). Furthermore, although the benefits of networks, such as access to resources, collaborative innovation, and risk mitigation, are widely recognized (Gulati et al., 2000; Powell et al., 1996), analyses that integrate economic, social, and institutional factors comprehensively remain scarce. Therefore, this research responds to the need for a more encompassing analytical model sensitive to the specificities of the contexts in which such networks emerge and operate.

This paper contributes to the field by proposing a framework integrating rational and social antecedents with key coordination and governance mechanisms essential to forming and developing inter-organizational networks. The inclusion of the institutional dimension represents a relevant theoretical and epistemological advancement, highlighting the central role of public and private agents in enabling and sustaining these networks in emerging markets. By combining theoretical synthesis with contextual awareness, the study offers a multidimensional perspective that enriches academic debate while providing practical guidance for managers and policymakers aiming to strengthen collaborative arrangements in complex environments. The originality of this proposal lies precisely in its articulation of economic and social paradigms with institutional mediation, applied to networks operating in low-institutional-density environments, an aspect still underexplored in literature.

The paper's structure is as follows: Section 2 discusses the antecedents and critical variables for the formation of inter-organisational networks; Section 3 presents the primary mechanisms for network development and consolidation; Section 4 analyses the benefits and challenges faced by inter-organisational networks.

Antecedents and Variables in the Formation of Interorganizational Networks

The literature has extensively examined the formation of interorganizational networks, dividing the discussion into two main paradigms: rational-economic and social (Gulati, 1998; Granovetter, 1985). These paradigms reflect the wide range of factors influencing firms to enter and develop networks, highlighting the strategic advantages of cooperation and the social dynamics that facilitate these relationships (Powell, 2003). This section elaborates on these paradigms, emphasising key antecedents and variables central to the formation of networks.

Rational-economic antecedents

The rational-economic paradigm focuses on the tangible benefits companies gain from joining networks, such as increased market access, technology sharing, and economic advantages. Researchers such as Hoffmann et al. (2004) and Ceglie and Dini (1999) highlight that firms primarily join networks to enhance their market position by accessing new opportunities or expanding existing ones. This is particularly relevant in highly competitive industries, where networks allow small firms to collaborate and compete globally (Gulati, 1998). Powell (2003) argues that network participation also facilitates access to new technologies and innovation opportunities, enabling firms to acquire technological capabilities that would be difficult to develop independently. This access is essential in industries characterised by rapid technological change, where the pace of innovation is crucial to maintaining a competitive edge (Maurer et al., 2011; Sousa et al., 2022). Additionally, networks enable economies of scale and scope, reducing costs and increasing competitiveness (Uzzi, 1997).

Another significant economic benefit of networks is cost-sharing and enhanced bargaining power. As the network grows, the collective negotiating position of its members strengthens, leading to lower input costs and more favourable trading terms (Gulati & Gargiulo, 1999). Small firms, for instance, often pool resources to negotiate with larger suppliers, benefiting from reduced transaction costs (Dyer & Singh, 1998). Moreover, knowledge exchange is a crucial variable for organisational competitiveness. Networks provide knowledge-sharing environments, allowing firms to learn from one another and develop new capabilities (Gulati et al., 2000). This exchange includes technological knowledge, managerial practices, market insights, and strategic planning (Freire et al., 2022).

Finally, risk and uncertainty management are critical for firms joining networks. By becoming part of networks, firms can mitigate market unpredictability and reduce the likelihood of opportunistic behaviour by partners (Gulati et al., 2000). Networks provide a safety net by distributing risks among multiple actors (Provan & Kenis, 2008). Furthermore, access to information within networks is often more prosperous and more reliable than market-based alternatives (Powell, 2003).

Social antecedents

In contrast to the rational-economic paradigm, the social paradigm emphasises the importance of interpersonal relationships, trust, and social capital in forming networks. Although less tangible, these factors are equally crucial for establishing effective and long-lasting networks (Granovetter, 1985; Gulati, 1998). Trust is perhaps the most widely discussed variable in this paradigm, referring to the expectation that network participants will act in the collective's best interest (Zaheer et al., 1998). Burt (2000) argues that trust forms the foundation for cooperation, reducing transaction costs and fostering outstanding commitment among network members.

Another important social factor is commitment, seen as the reciprocal of trust, where firms are willing to engage in collective actions even when immediate returns are not guaranteed (Ring and Van de Ven, 1994). Commitment ensures that firms remain engaged in the network over the long term, contributing to the stability and sustainability of interorganizational relationships (Maurer et al., 2011). Interdependence is also significant within the social paradigm. As firms specialise in particular areas, they increasingly rely on each other to achieve their strategic objectives (Freire et al., 2022). This specialisation strengthens cooperation ties, as one firm's success is linked to its network partners' success (Uzzi, 1997).

Pre-existing social relationships are also crucial in network formation, as firms with existing ties are more likely to enter cooperative arrangements (Larson, 1992; Gulati & Gargiulo, 1999). These relationships provide a foundation of trust and mutual understanding, facilitating the formation of new alliances and strengthening existing networks (Ring and Van de Ven, 1994). Klerk and Kroon (2008) argue that these pre-existing relationships also reduce the risks of opportunistic behaviour, as firms have a clearer understanding of each other's capabilities and intentions.

Initial Structuring of Networks

The structuring of interorganizational networks has been the focus of numerous studies, ranging from models of cooperation and coordination (Goyal & Veja-Redondo, 2005) to analyses of how networks dynamically evolve (Caulier et al., 2015). At the core of network structuring is formalising relationships between firms and developing governance mechanisms to manage these relationships (Provan & Kenis, 2008). Larson and Starr (1993) propose a seminal model of network formation that describes the stages through which dyadic relationships evolve into fully developed networks. In the initial stage, firms establish opportunistic connections with potential partners, evaluating these relationships based on their strategic fit.

As the network grows, these dyadic exchanges transform into socioeconomic exchanges, where the social and economic dimensions of the relationship are intertwined. The final stage of network formation involves the expansion of these exchanges, resulting in a more complex and interdependent network structure. As described by Larson and Starr (1993), Crystallisation is the point at which the network reaches stability and predictability. Firms fully integrate into the network, and high trust and mutual dependency characterise their relationships. The following sections will further explore this process.

Development and consolidation of inter-organisational networks

Developing interorganizational networks involves structuring member relationships and implementing effective management mechanisms to ensure successful collaboration. The efficient coordination of these relationships is essential for reducing opportunistic behaviour, increasing trust, and achieving desired outcomes within the network (Grandori & Soda, 1995; Jones et al., 1997). This section discusses the fundamental mechanisms that contribute to the development and consolidation of networks based on theoretical perspectives from organisational and social network theories.

Network development mechanisms

According to Grandori and Soda (1995), developing interorganizational networks requires the implementation of various organisational coordination mechanisms. These mechanisms are crucial for managing the complex interdependencies between firms and facilitating formal and informal cooperation. The authors identified nine fundamental mechanisms: communication, decision-making, social control, integration rules, typical teams, hierarchy, planning, incentive systems, selection systems, and information systems. Each of these mechanisms plays a fundamental role in ensuring that networks operate efficiently from the initial formation to increased complexity (Provan & Kenis, 2008; Maurer et al., 2011). For participating firms, implementing these coordination mechanisms can generate significant organisational impacts, such as greater process alignment, reduced transaction costs, and enhanced responsiveness to changes in the external environment. These outcomes contribute directly to improved operational performance and long-term strategic positioning.

Communication, decision-making, and negotiation are fundamental to maintaining collaboration within networks. Effective communication allows firms to align their objectives, manage conflicts, and maintain ongoing dialogue, ensuring that decisions are made collaboratively (Inkpen & Tsang, 2005; Gulati et al., 2012). Repeated interactions through negotiation reinforce long-term partnerships, minimising coordination costs and promoting transparency (Grandori & Soda, 1995). Studies such as those by Maurer et al. (2011) and Caloffi et al. (2015) also highlight the importance of digital platforms in facilitating communication and integration in networks. For firms, these communication mechanisms support conflict resolution and decision-making efficiency and accelerate innovation and knowledge circulation across organizational boundaries—both critical for competitiveness, particularly in dynamic sectors.

Social control mechanisms, such as reputation and mutual monitoring, are also essential for network governance. These mechanisms establish informal rules and standards that guide the behaviour of network members, encouraging cooperation and discouraging opportunistic actions (Inkpen & Currall, 2004). As Gulati et al. (2012) argued, developing reputation-based systems helps build trust among partners by rewarding cooperative behaviours and penalising those who fail to meet group expectations (Jones et al., 1997). This contributes to a safer relational environment for firms, minimising the risks of opportunism and enabling them to invest in joint initiatives with greater confidence, which can be especially important for small and medium-sized enterprises.

As networks grow, integration rules and typical teams become necessary to manage the increasing complexity of interorganizational relationships. Integration rules define the roles and responsibilities of each member, while teams are established to coordinate tasks across the network (Grandori & Soda, 1995). The efficient coordination among network members is facilitated by creating flexible structures, ensuring that the network remains responsive to changing market conditions. From the perspective of individual firms, these mechanisms support task coordination and clarify organisational roles, helping to streamline operations and reduce uncertainties in collaborative ventures. This directly impacts resource allocation, project efficiency, and inter-firm accountability.

Network governance mechanisms

In addition to development mechanisms, network governance requires strategies to manage relationships and safeguard against opportunistic behaviour. Jones et al. (1997) propose four fundamental governance mechanisms based on transaction cost and social network theories: careful partner selection, creating a network-specific culture, collective social sanctions, and reputation systems. These mechanisms reduce coordination costs and increase trust among members, contributing to the network’s stability (Sousa et al., 2022).

Careful partner selection and control over network size are crucial to ensuring that members share common values and goals (Gulati & Gargiulo, 1999). Creating a network-specific culture that fosters shared values and norms facilitates complex information exchange and aligns member expectations (Jones et al., 1997). Restricted access also reduces coordination costs and increases the likelihood of successful cooperation, as firms with similar expectations and capabilities are more likely to engage in mutually beneficial exchanges (Gulati et al., 2012).

As Maurer et al. (2011) highlighted, creating a network-specific culture refers to establishing shared values, norms, and practices that guide behaviour within the network. Macro cultures, developed through socialisation processes, help align member expectations and facilitate complex information exchange. However, creating a cohesive culture can be challenging, especially in networks of firms from diverse cultural and institutional backgrounds. For companies, a strong and cohesive network culture facilitates trust-building, accelerates joint learning processes, and reduces misunderstandings, thereby improving collaboration outcomes and enhancing firms' capacity to co-create value.

The third mechanism, collective social sanctions, involves penalising members who violate norms or fail to meet group expectations. These sanctions reinforce acceptable behaviours and discourage opportunistic actions, as members understand that non-compliance can result in reputational damage or exclusion from the network (Jones et al., 1997; Gulati et al., 2012).

Finally, reputation is critical in ensuring long-term cooperation within the network. Reputation protects against opportunistic behaviours, incentivising firms to maintain their standing within the group (Sousa et al., 2022). In uncertain environments, reputation is a valuable signal of reliability and competence, helping firms navigate complex interorganizational relationships (Gulati & Higgins, 2003). Maintaining a strong reputation within the network also reinforces firms' legitimacy, improving their attractiveness as partners and increasing their access to valuable resources and opportunities within the ecosystem.

Benefits and Difficulties of Interorganizational Networks

Aspects related to the benefits of interorganizational networks are widely discussed in the literature (Xavier Filho et al., 2015). Several studies highlight how companies can gain competitive advantages, access new markets, and improve their operational efficiency by collaborating in networks. However, there are also significant challenges that can limit the success of these networks. This section will address the benefits and difficulties of operating interorganizational networks.

Benefits of Inter-organizational networks

An access to resources and market power

One of the primary benefits of interorganizational networks is access to shared resources and increased market power. According to Mesquita and Lazzarini (2008), companies that operate in networks can benefit from greater bargaining power, economies of scale, and expanded market coverage. This resource access is precious for small and medium-sized enterprises (SMES), which often face difficulties competing with large corporations. These companies can share assets, technology, and infrastructure by being part of a network, enabling faster and more efficient expansion (Gulati et al., 2012).

Jarillo (1988) argues that the gains from interorganizational networks tend to manifest in the long term, allowing companies to develop a robust competitive base. Furthermore, more recent studies, such as those by Borgatti and Foster (2003), reinforce that cooperation within networks offers collective solutions to everyday challenges, such as the need for innovation and rising costs, while simultaneously strengthening the market power of participants.

Collaborative innovation and collective learning

One of the most valuable benefits of networks is the ability to foster collaborative innovation and collective learning. Powell et al. (1996) highlights that networks facilitate sharing knowledge and developing new products by enabling cooperation between companies, universities, and research centers. Additionally, networks allow for the creation of new technological and business solutions.

Maurer et al. (2011) assert that network participation increases organizational social capital, strengthening collective learning processes and facilitating knowledge transfer. This is especially relevant for companies operating in dynamic sectors such as technology and biotechnology, where collaborative innovation is fundamental for competitiveness (Phelps et al., 2012). Moreover, open innovation networks enable small companies to overcome resource limitations by collaborating with other companies and institutions to access advanced technologies and develop innovative products (Chesbrough & Bogers, 2014).

Cost reduction and risk mitigation

Another essential benefit of interorganizational networks is cost reduction and risk mitigation. According to Lavie (2006), participating in networks allows companies to share costs related to research and development, production, and marketing, which is particularly useful for firms with limited resources. Furthermore, network coordination facilitates risk management, enabling companies to share the financial burden and operate more efficiently.

By sharing risks, companies also reduce the uncertainty associated with adopting new technologies and exploring new markets (Gulati & Gargiulo, 1999). Distributing risks among network participants allows for more secure and feasible investments that would otherwise be difficult to achieve individually (Lavie et al., 2012).

Collectively, these benefits have a direct impact on organizational strategy and performance. They enable firms to scale their operations, enter new markets with lower barriers, accelerate innovation cycles, and strengthen long-term sustainability. For small and medium-sized enterprises, participating in networks often represents a strategic shift towards more resilient and adaptive business models.

Difficulties of Inter-organizational networks

Despite the numerous benefits, interorganizational networks face significant challenges that can compromise their success and sustainability. These challenges affect the network structure and produce concrete consequences for individual firms, from increased coordination costs and reputational risks to strategic uncertainty and internal misalignment. Understanding how these difficulties shape firms' behaviors and outcomes is critical to developing more effective governance strategies.

Opportunism and information asymmetry

Opportunism is one of the main challenges in interorganizational networks. Williamson (1975) defines opportunism as a behavior where an actor seeks to maximize their interests at the expense of other network members. This behavior can undermine trust and cooperation between members, leading to network failure (Das & Teng, 1998).

Information asymmetry worsens the issue, where some members have privileged access to critical information while others are disadvantaged. This creates imbalances in bargaining power and decision-making (Reuer & Ariño, 2007). Managing these asymmetries requires robust governance mechanisms, such as social sanctions and incentive systems, to ensure that all members benefit equitably (Gulati et al., 2012).

Managerial complexity and strategic misalignment

As networks grow, their managerial complexity increases significantly. Gomes-Casseres (1996) suggests that more extensive networks face organizational difficulties as coordinating many participants becomes more complex and inefficient.

Additionally, companies within the network may suffer from strategic misalignment. If network members do not share a common strategic vision, this can lead to conflicts and compromise cooperation (Parkhe, 1993). Moreover, Zeng and Chen (2003) noted that the group's lack of strategic maturity may result in losing stakeholder support, undermining the network's success.

Loss of trust and weakening of social ties

Trust is one of the central pillars of interorganizational networks. However, opportunistic behaviors and strategic misalignments can erode trust over time (Gulati et al., 1998). The deterioration of trust between members can result in uncertainties and the exit of companies from the network (Jones et al., 1997).

Furthermore, internal rivalries can weaken social ties within the network, transforming a collaborative environment into one of internal competition (Ring and Van de Ven, 1994). This compromises the network's long-term sustainability, eventually dissolving (Provan & Kenis, 2008).

In summary, interorganizational networks offer substantial benefits, such as access to resources, the promotion of collaborative innovation, and risk mitigation. However, these benefits are accompanied by significant challenges like opportunism, managerial complexity, and trust erosion. To maximize the benefits and mitigate risks, networks must implement robust governance mechanisms, such as social control systems, collaboration incentives, and transparent decision-making processes.

The effectiveness of a network largely depends on its ability to balance the individual interests of its members with the collective goals of the network. Only through careful management and building a collaborative culture can networks achieve long-term success.

For participating firms, this balance influences not only the continuity of the inter-organizational arrangement but also their strategic alignment, organizational learning capacity, and long-term competitiveness. Addressing these difficulties proactively can determine whether the firm’s participation in a network becomes a source of sustained advantage or vulnerability.

The Role of Institutions in the Formation and Development of Interorganizational Networks in Emerging Markets

In emerging markets, institutions play a crucial role in forming and developing interorganizational networks, acting as facilitators and regulators of the environments in which these networks operate. These institutions, including government agencies, development organisations, incubators, universities, and non-governmental organisations, are essential in mitigating economic instability and market volatility uncertainties in these contexts (Khanna & Palepu, 2010). They help create an environment of greater predictability and trust, which is crucial for establishing and maintaining cooperative relationships among firms.

In emerging markets, where institutional infrastructure is often less developed than in advanced economies, institutions assume a compensatory role by providing resources, reducing transaction costs, and facilitating access to markets and technologies. Ahlstrom and Bruton (2006) noted that these institutions can alleviate structural barriers to growth and network development by promoting favourable public policies, tax incentives, and direct financial support for forming collaborative business networks.

Furthermore, institutions in emerging markets serve as catalysts for creating platforms for innovation and collaboration. Through funding programs, incubation, and acceleration initiatives, these institutions promote interorganizational cooperation, especially in strategic sectors such as technology, advanced manufacturing, and agribusiness. Studies such as that of Cui et al. (2018) highlight that institutions in these countries also play a crucial role in strengthening human capital by offering training programs that enhance firms' capacities to innovate and collaborate.

Another relevant role of institutions in emerging markets is promoting norms and standards that encourage effective network governance. Regulatory agencies and multilateral organisations contribute to the establishment of formal and informal rules that guide corporate behaviour within networks. This includes everything from business conduct guidelines to collective sanction mechanisms that help mitigate opportunistic behaviour, thus promoting the long-term sustainability of networks (Peng et al., 2009).

Additionally, institutions in emerging markets often take a more active role in conflict mediation and network coordination, given that market mechanisms alone may not suffice to ensure cooperation. Meyer et al. (2011) argue that in such contexts, institutions provide resources and act as mediators, aligning divergent corporate interests and facilitating the implementation of collaborative solutions that benefit the entire network.

Finally, institutions' role in forming and developing interorganizational networks in emerging markets is dynamic and adaptive. As networks mature, institutions need to adjust their policies and support programs to meet the evolving needs of firms and adapt to global environmental changes. In this way, institutions promote the creation of networks and ensure their continued adaptation and competitiveness in an increasingly challenging global landscape (Marquis & Raynard, 2015).

In summary, institutions in emerging markets are essential for facilitating the formation and development of interorganizational networks by providing financial, regulatory, and technical support and promoting innovation and effective governance. These institutions create a safer environment for companies to collaborate and compete more effectively in global markets.

Framework for the Formation and Development of Inter-Organizational Networks

This section presents a framework for forming and developing business interorganizational networks, adapted from Larson and Starr's organisational network formation model (1993). It includes antecedent variables from the rational-economic and social paradigms, the coordination mechanisms of Grandori and Soda (1995), the governance mechanisms of Jones et al. (1997), and the benefits and challenges faced by business networks. Figure 1 illustrates this framework. The framework is explained in detail in the following subsections (6.1 to 6.5), each addressing a specific component of the model and its relevance to network formation, development, and institutional support.

Antecedents and formation of interorganizational networks

The original model by Larson and Starr (1993) proposes three stages for forming organisational networks, which have been adapted for this framework. In the first stage, actors seek to identify the best partners to develop exchange relationships that are initially opportunistic and aimed at meeting economic and social needs. These behaviours are influenced by the antecedents that motivate network formation.

According to authors like Cui et al. (2018), these antecedents can be rational-economic, based on resource dependence theory, or social, grounded in interpersonal relationships and mutual trust theories. Companies join networks to address various needs, such as market access, new technologies, economic advantages, knowledge, material resources, risk reduction, uncertainty mitigation, and increased trust and legitimacy. These motivations are fundamental in emerging markets, where instability and a lack of formal infrastructure reinforce the need for cooperation among firms (Khanna & Palepu, 2010). Hence, the following proposition is formulated.

Proposition 1: The formation of interorganizational networks in emerging markets is strongly driven by social and economic antecedents, particularly in contexts marked by institutional instability, resource scarcity, and underdeveloped formal infrastructure.

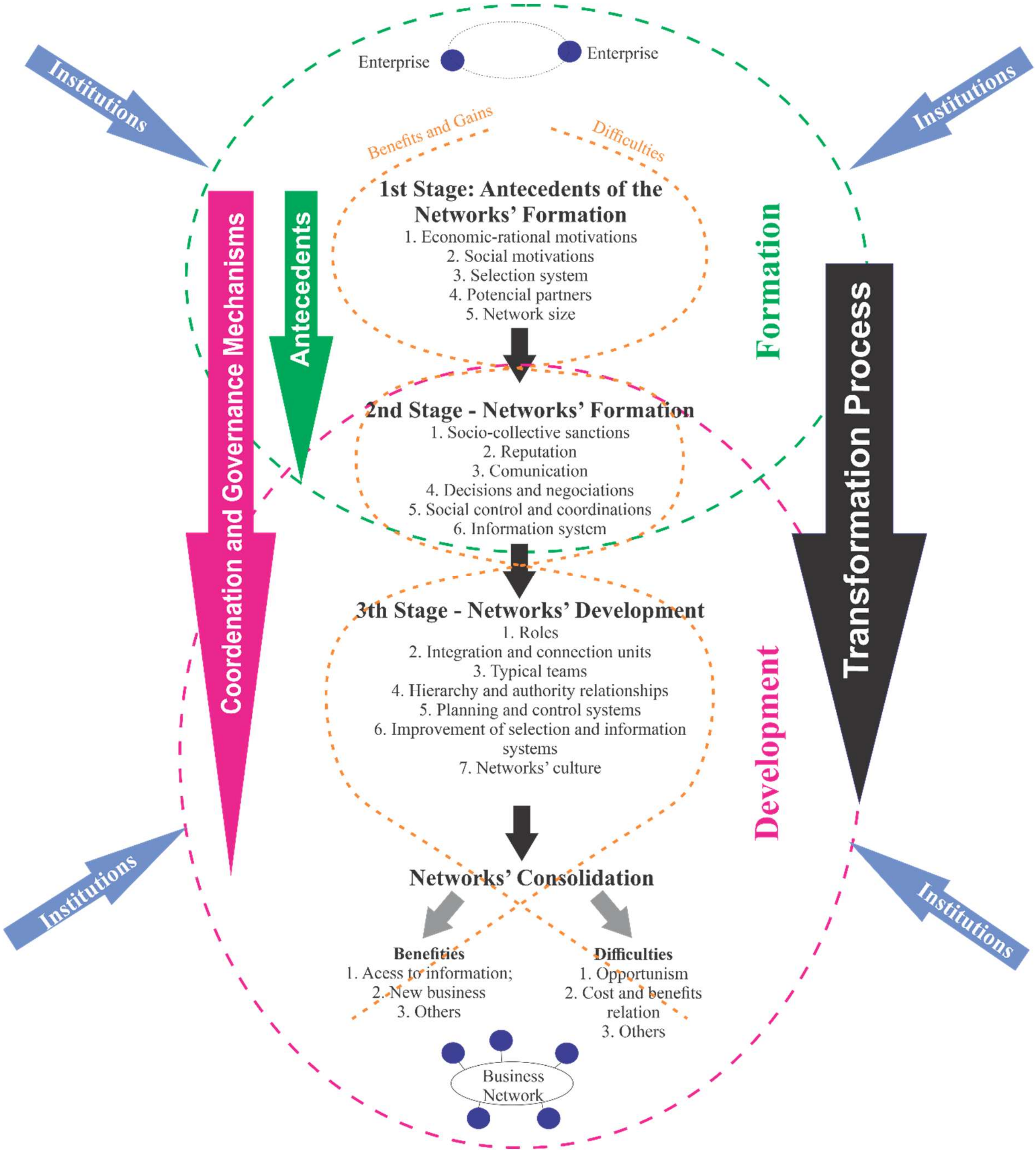

Figure 1. Framework for analysing the network formation and development process.

Source: Prepared by the authors from various sources.

Coordination and governance mechanisms in networks

In the second stage, as described by Larson and Starr (1993), dyadic relationships become more structured, and social norms and control mechanisms, such as collective sanctions and reputation, emerge. Coordination and governance mechanisms become essential for ensuring network stability and mitigating opportunistic behaviour.

Coordination mechanisms, such as those proposed by Grandori and Soda (1995), include communication, decision-making, and information systems. These facilitate cooperation and the efficient exchange of resources. Moreover, Jones et al. (1997) emphasise the importance of social sanctions and reputation, which help regulate member behaviour and promote the trust necessary to sustain the network. Recent studies, such as that of Maurer et al. (2011), reinforce the crucial role of reputation in open innovation networks, where knowledge sharing can be risky but is essential for collaborative innovation. Accordingly, we propose the following proposition:

Proposition 2: Interorganisational networks in emerging markets that gradually develop formal coordination mechanisms and social reputation systems tend to exhibit lower levels of opportunistic behaviour and better relational stability among members.

Network consolidation and benefits

Larson and Starr (1993) describe network consolidation as crystallisation, which occurs when interactions between members become stable and exit costs increase. At this stage, networks benefit from increased market power, collective solutions, and cost reduction, as Balestrin and Verschoore (2016) observed. Successful networks accumulate social capital and promote collaborative innovation, creating sustainable competitive advantages.

Authors such as Sousa et al. (2022) argue that in dynamic sectors like technology and biotechnology, collaborative networks offer an ideal platform for value co-creation and collective learning, essential for ongoing organisational development. Additionally, Powell et al. (1996) highlight that well-structured networks enable rapid adaptation to market changes, which is vital for their longevity. Therefore, we formulate the following proposition:

Proposition 3: Consolidating interorganisational networks in emerging markets is positively associated with accumulating social capital and dynamic adaptability, fostering collaborative innovation and the development of sustainable competitive advantages.

Challenges and opportunism in networks

Challenges such as opportunism and strategic misalignment emerge throughout the network's development. According to Williamson (1975), opportunism occurs when members seek to maximise their interests at the expense of others, undermining trust and compromising network effectiveness. In more extensive networks, managerial complexity and coordination become more complex, as Gomes-Casseres (1994) noted. Moreover, when members pursue divergent goals, strategic misalignment can reduce collective effectiveness (Peng et al., 2009).

Recent studies emphasise the importance of robust governance mechanisms, as Jones et al. (1997) suggested, to mitigate these challenges. Effective social sanctions and reputation mechanisms maintain network cohesion and prevent opportunistic behaviour. In light of the above discussion, we put forward the following proposition:

Proposition 4: Interorganisational networks in emerging markets that adopt robust governance mechanisms, such as social norms, collective sanctions, and reputational systems, demonstrate greater resilience to opportunistic behaviour and strategic misalignment among participants.

The Role of Institutions in the formation and development of networks

Institutions are central in forming and developing interorganizational networks, especially in emerging markets. They provide regulatory, technical, and financial support that facilitates the creation and sustainability of these networks (Ahlstrom & Bruton, 2006). In emerging markets, where infrastructure is often insufficient, institutions help mitigate uncertainties and reduce transaction costs, promoting more effective cooperation between firms (Marquis & Raynard, 2015).

Furthermore, as Scott (2008) observed, institutions help establish norms and practices that facilitate governance within networks, promoting collaborative innovation and the development of technological capabilities. They act as mediators and orchestrators, ensuring that networks adapt to market changes and remain competitive in challenging global scenarios (Cui et al., 2018). Thus, the institutional role is vital for the formation, consolidation and ongoing success of interorganizational networks. Based on these arguments, we advance the following proposition:

Proposition 5: The presence and active involvement of regulatory, technical, and financial institutions are positively associated with the formation, governance, and long-term sustainability of interorganizational networks in emerging markets.

Practical Examples of Interorganizational Network Development

This section explores practical examples of interorganizational networks, specifically focusing on the challenges faced in emerging markets. The formation and development of these networks in such markets present unique characteristics, primarily due to the absence of robust institutional infrastructure and the reliance on institutions to overcome structural difficulties.

The following examples demonstrate how networks in emerging markets evolve through the model's three stages, highlighting institutions' crucial role in this process.

First stage: antecedents and initial formation

In the first stage, companies in emerging markets enter interorganizational networks driven by economic and social needs, often exacerbated by a lack of resources and inadequate infrastructure. For example, in Brazil, startup networks in São Paulo, such as those associated with the Innovation, Entrepreneurship, and Technology Centre (CIETEC), emerged to access limited resources and face global competition (Antunes et al., 2021). These startups, like their counterparts in developed markets, sought venture capital and technological knowledge but faced a greater reliance on support institutions, such as accelerators and innovation hubs, due to the limitations of the local entrepreneurial ecosystem.

In contrast, startups in Silicon Valley partner with large companies and venture capital investors to gain access to financial resources and technical expertise. Although opportunistic behaviour is observed in both contexts, the fundamental difference lies in institutional support. In emerging markets, institutions play a central role in mediating these initial relationships by providing the necessary infrastructure and funding for startups to integrate into broader networks (Castro et al., 2021).

Second stage: network relationship formation

As networks evolve into the second stage, interorganizational relationships become more formal and structured. In emerging markets, the formalisation of these relationships is often driven by institutions that facilitate the creation of governance mechanisms, such as reputation systems and social sanctions. In Mexico, for instance, Nissan's supplier network developed around a clear governance structure where supplier reputations were closely monitored (Maurer et al., 2011). However, unlike in developed markets such as Germany, where governance is mainly self-regulated, the Mexican network significantly relies on institutions to provide continuous support, ensure compliance with standards, and promote local capacity development.

In Brazil, development institutions like the National Bank for Economic and Social Development (BNDES) play a critical role by providing funding and technical training to ensure that networks evolve sustainably. These institutions help mitigate market failure risks by promoting governance mechanisms that ensure network success, even in environments with less-developed institutional infrastructure.

Third stage: network development and consolidation

In the third stage, networks in emerging markets face unique challenges in achieving consolidation. While networks in developed markets, such as Volkswagen in Germany, consolidate based on self-regulated governance and formal contracts, networks in emerging countries rely more on continuous institutional support to overcome structural barriers. In South Africa, for instance, technology company networks face challenges related to insufficient funding and inadequate infrastructure. However, government initiatives and local institutions have been essential in providing technical and financial support, allowing these networks to move toward consolidation (Powell et al., 1996).

In China, BYD consolidated a network of battery and electric vehicle suppliers with strategic support from government institutions. From financial subsidies to favourable regulations, these institutions' roles ensured interdependence among network members and their success in the global market. Governance is highly formalised, and the reliance on public policies demonstrates how state intervention can be critical in emerging markets to consolidate internationally competitive networks (Caloffi et al., 2015).

Consolidation: benefits and challenges

The benefits of consolidation in interorganizational networks, especially in emerging markets, include access to new markets, collaborative innovation, and economies of scale. However, significant challenges remain. In India, for example, the technology company network in Bangalore experienced remarkable growth due to knowledge sharing and collaborative innovation. However, opportunism and managerial complexity, exacerbated by the lack of solid governance, posed continuous challenges to the network's sustainability (Sousa et al., 2022).

The difference between emerging and developed countries lies mainly in the role of institutions in mitigating these challenges. In emerging markets, the lack of formal infrastructure and strategic misalignment among members can undermine network effectiveness. External institutions that promote cohesion and long-term collaboration must strengthen governance (Maurer et al., 2011).

The role of institutions in the formation and development of networks in emerging markets

Institutions are central in forming and developing interorganizational networks in emerging markets, mainly due to less favourable market conditions and limited infrastructure. Institutions, including government agencies and business support organisations, provide the regulatory framework and financial support for networks to overcome structural obstacles (Marquis & Raynard, 2015).

Unlike in developed countries, where companies have more autonomy in forming and managing networks, institutions in emerging markets often act as mediators to ensure the networks' survival and prosperity. They are critical in facilitating governance, creating norms, and promoting innovation. Examples from China and Brazil show how state support and development agencies can be crucial for consolidating robust networks (Ahlstrom & Bruton, 2006).

Institutions are also essential for addressing common challenges networks face in emerging markets, such as limited access to funding, inadequate technological infrastructure, and the absence of a well-established innovation culture. In Brazil, for instance, institutions like the Brazilian Micro and Small Business Support Service (SEBRAE) and the National Bank for Economic and Social Development (BNDES) play a fundamental role in supporting interorganizational networks by providing financing, training, and strategic guidance to help companies integrate into global networks and innovate more competitively (Antunes et al., 2021). This institutional support is crucial for overcoming structural barriers that often hinder network development in emerging markets.

Moreover, institutions in emerging markets act as catalysts for trust and cooperation among network members. Companies in these markets often face challenges related to a lack of confidence and the informality of collaborative agreements. Development agencies, incubators, and business associations help formalise these relationships by promoting the creation of contracts and more robust governance mechanisms that ensure better stability and security in network interactions (Peng et al., 2009).

However, the role of institutions in emerging markets extends beyond the initial formation of networks. They continue to play a vital role throughout the network's life cycle, helping to resolve strategic misalignments, promote adaptation to market changes, and foster collaborative innovation. In India, for example, the government has incentivised collaboration between technology companies and universities through research and development (R&D) policies, creating an ecosystem that encourages continuous innovation and network expansion (Chatterji et al., 2014).

Another critical point in emerging markets is the role of institutions in providing regulatory support to ensure that networks can compete internationally. South Africa, for instance, benefits from government support in strengthening its information technology industry, facilitating the creation of export networks, and promoting the international competitiveness of its companies (Khanna & Palepu, 2010). This type of institutional support is essential for networks in emerging markets to consolidate and expand their operations beyond their local borders.

Institutions' role is vital for forming and developing interorganizational networks in emerging markets. Unlike in developed countries, where networks often evolve more autonomously, networks in emerging markets rely heavily on institutional support to overcome structural and operational barriers. Public, private, and third-sector institutions provide the regulatory framework, financial support, and technical expertise that allow networks to thrive and adapt to emerging markets' unique challenges and opportunities. In this way, institutions facilitate the creation and expansion of these networks and ensure they can compete and innovate in an increasingly dynamic global environment.

2 Discussions

Theoretical contributions

This study provides significant contributions to interorganizational networks by addressing gaps identified in recent literature on the formation and development of networks across various contexts. The integration of network and governance theories, as proposed by Grandori and Soda (1995) and Jones et al. (1997), alongside the adaptation of Larson and Starr's (1993) three-stage model, results in a robust framework that advances the understanding of network formation, evolution, and consolidation processes. Recent studies, such as those by Sousa et al. (2022) and Freire et al. (2022), emphasise the growing importance of investigating how interorganizational networks impact innovation and competitiveness in increasingly uncertain environments. The model presented here responds to this demand by integrating economic and social variables and detailing the coordination and governance mechanisms essential for network success over their life cycle.

A central theoretical contribution of this study is the integration of rational and social dimensions in the analysis of interorganizational networks, providing a comprehensive view of the factors driving network formation. Authors such as Caloffi et al. (2015) and Maurer et al. (2011) underline the need for frameworks that consider economic aspects, such as resource access and risk mitigation, and social factors, such as trust-building and social capital. This article addresses these demands by offering a model that explores economic motivations for network formation and the social mechanisms driving their sustainability and development.

Furthermore, the role of institutions as facilitators of interorganizational network success is extensively highlighted. Powell et al. (1996) and Sousa et al. (2022) have already emphasised the importance of institutions in supporting networks, and this study advances that discussion by demonstrating how incubators, governmental agencies, and other catalysing entities act as crucial agents, particularly in emerging countries where institutional structures are often less robust. The framework developed shows these institutions' role in providing regulatory environments and incentives that promote long-term cooperation among network participants.

The study also contributes significantly by focusing on applying the framework in emerging countries. While most network literature focuses on developed countries, Ivens et al. (2018) emphasise the need for more studies in emerging contexts. This article fills that gap, showing how networks in countries like Brazil and South Africa face distinct challenges, such as limited infrastructure and a greater reliance on institutions to facilitate network development.

Managerial and practical implications

From a managerial perspective, the proposed framework offers practical guidance for managers interested in forming or consolidating interorganizational networks. Efficient governance is vital to network success, and the study suggests that implementing mechanisms such as social sanctions, reputation systems, and transparent communication is crucial for maintaining trust and long-term cooperation. In emerging markets, where access to resources and technological innovations is more restricted, managers should invest in creating formal governance structures that ensure strategic alignment among network members.

Partner selection mechanisms are also fundamental to ensure that new members share the same values and objectives, which can reduce conflicts and increase network effectiveness over the long term. As highlighted by Grandori and Soda (1995), a rigorous selection process can ensure the inclusion of partners that bring value to the network while avoiding the introduction of actors that could undermine cooperation.

Social, economic, and policy implications

Interorganizational networks promote regional development and include small and medium-sized enterprises (SMES) in global markets. In emerging countries, where structural limitations are more pronounced, networks allow SMES to access larger markets and collaborate on innovation, promoting greater competitiveness. As demonstrated in the cases of São Paulo and Cape Town, interorganizational networks are essential for fostering collaborative innovation and strengthening regional economies.

For policymakers, the study emphasises the importance of creating regulatory environments that encourage the formation and development of networks. Tax incentives, acceleration programs, and direct financing are fundamental for networks to flourish in emerging markets, where companies rely more on institutional support. Promoting collaboration between universities, research centres, and companies is essential to creating an innovation environment that allows the sustainable development of networks in high-tech sectors.

Finally, interorganizational networks also promote social and economic inclusion by encouraging the participation of companies of different sizes and cultural backgrounds. As described in this study, networks that foster open innovation and knowledge sharing significantly reduce regional inequalities, promoting more balanced and inclusive development.

3 Final Considerations

This theoretical essay presented a framework for forming and developing interorganizational networks, divided into three stages: antecedents, formation and development, and network consolidation. The framework integrates the rational economic and social paradigms, highlighting why companies join networks, such as access to markets and technologies, and factors like trust and social capital. Additionally, coordination and governance mechanisms, based on the contributions of Grandori and Soda (1995) and Jones et al. (1997), were essential to understanding how these networks evolve, reinforcing the importance of communication, social sanctions, and reputation systems throughout the development stages.

The benefits of interorganizational networks, as pointed out by Verschoore and Balestrin (2008), include economies of scale, collective solutions, and collaborative innovation, while challenges such as opportunism and strategic misalignment may hinder consolidation. The proposed framework allows for a holistic analysis of these factors, providing a theoretical basis for new studies and offering practical guidance for companies and institutions seeking to strengthen their cooperation networks.

Limitations and future research

One major limitation of this study is that the proposed framework presents a static perspective, not adequately incorporating the environmental dynamics that impact interorganizational networks. As networks constantly interact with external factors, future research should focus on how these models adapt to environmental changes such as market volatility and technological advancements. Moreover, as this is a theoretical essay, the model must be empirically validated by testing its applicability in different sectors and contexts.

The strength of this study lies in integrating rational and social variables into a single framework, offering a comprehensive view of network formation and development processes. Future research could explore how these mechanisms manifest in emerging markets and investigate the influence of institutions on network evolution. Another promising avenue is the longitudinal study of interorganizational networks, which would allow for tracking how governance and coordination mechanisms evolve, offering more profound insights into network consolidation and addressing challenges.

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