

Article

Paradoxes and Tensions in Interorganizational Relationships: A Systematic Literature Review

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Abstract: This paper examines the literature on paradoxes and tensions in interorganizational relationships (IORs) and identifies how such tensions are managed in interorganizational settings. In a systematic literature review, we analyzed 95 papers published between 1997 and 2021 on the subject of paradoxes in IORs. The sample showed a variety of paradoxes occurring in different interorganizational contexts, such as knowledge sharing and protection, short- and long-term orientation, and exploration and exploitation. The diversity of such paradoxes has led to crescent interest in cooperation. Our main results show that contextual factors and management practices influence the balance between paradoxes. Although the particular context of each IOR may be unique in terms of balancing paradoxical elements, we identified a set of “pre-tension practices” and “post-tension practices” which may help avoid the emergence of tensions or reduce their adverse effects. The findings of our systematic literature review have also enabled us to propose future research avenues concerning managing tensions in IORs, for instance, the link between paradoxes and IOR performance.

Keywords: paradox; tension; interorganizational relationship; tension management



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1. Introduction

Paradoxes refer to “contradictory yet interrelated elements” (Smith and Lewis 2011, p. 389) present in interorganizational relationships (IORs), regardless of whether actors recognize them or not. Studies have considered a set of paradoxes in IORs, such as the following: knowledge sharing and knowledge protection (Dhayanithy and Mukherjee 2020; Jarvenpaa and Majchrzak 2008, 2016); unity and diversity (Berthod et al. 2017; Saz-Carranza and Ospina 2011); flexibility and rigidity (Zheng et al. 2019; Vangen 2017; Vangen and Winchester 2014); autonomy and accountability (Vangen 2017; Berthod et al. 2017); and exploration-exploitation (Sun and Lo 2014; Beckman et al. 2004; Úbeda-García et al. 2019; Im and Rai 2008). More recently, the paradox between cooperation and competition has drawn the attention of researchers because of its potential to trigger tensions and contribute to relationship vulnerability (Gernsheimer et al. 2021; Munten et al. 2021).

The emergence of tensions derived from paradoxes may lead to IOR failure (Casey and Lawless 2011), spark conflicts (van Fenema and Loebbecke 2014) and prevent or negatively impact on value creation (Dyer et al. 2018) and value distribution (van Fenema and Loebbecke 2014). These phenomena are complicated further because most tensions are unlikely to exist in isolation but interact with one another (Raja et al. 2022). Therefore, preventing the emergence of tensions and managing tensions originating from paradoxes may seem challenging in interorganizational settings but can foster relational rents or help avoid relationship dissolution (Dyer et al. 2018; van Fenema and Loebbecke 2014).

Previous studies have reviewed the literature on paradoxes and tensions at organizational level (e.g., Schad et al. 2016; Putnam et al. 2016). However, our findings indicate that no such reviews have been conducted at interorganizational level. Despite the

growing interest in paradoxes and tensions in IORs, little is known about the dynamics between paradoxes, and few studies have analyzed the management of paradoxes and tensions in interorganizational settings (e.g., [Schad et al. 2016](#); [Vangen and Winchester 2014](#); [Korkeamäki et al. 2022](#)). Moreover, while one research stream may regard paradoxes and tensions as synonymous, others may focus on differences between the concepts. Thus, exploring the literature on paradoxes and tensions in IORs is relevant, for at least three reasons: (a) to understand the characteristics that differentiate paradoxes from tensions; (b) to identify factors that contribute to the emergence of tensions in IORs; and (c) to identify which management practices are used to prevent the emergence of tensions or reduce their negative effects.

Based on these research gaps, the aim of this study was to (1) examine the literature on paradoxes and tensions in IORs and (2) identify how managers avoid tension emergence or manage tensions in order to reduce their negative impact in IORs. Our findings contribute to the literature by organizing knowledge about paradoxes and tensions in IORs and offering a broad view of the management practices adopted by network managers to avoid or minimize tensions. Our study also contributes to management practice by summarizing the literature and offering guidelines to professionals responsible for managing tensions in IOR settings.

This paper is structured into five sections beyond this introduction. The next section presents the main concepts of paradoxes and tensions in interorganizational contexts. The third section explains the methodological procedures used in this study, including the criteria and techniques for analyzing the articles reviewed. In the fourth section, we present the results of the literature review. Finally, we conclude by presenting the theoretical and practical implications for managing paradoxes and tensions, the limitations of this research and avenues for future studies.

2. Paradoxes and Tensions in Interorganizational Relationships

While paradox refers to a persistent contradiction between interdependent elements ([Schad et al. 2016](#)), tension represents the negative side of business relationships, along with conflict, competition, burdens, crises and problems ([Tidström 2014](#)).

Concern about paradoxes started in organizational literature ([Poole and Van de Ven 1989](#)), and they have been the subject of discussion for decades ([Schad et al. 2016](#)). Seminal articles have built a solid conceptual background, beginning with [Poole and Van de Ven \(1989\)](#), who discussed management strategies for dealing with paradoxes. This discussion was deepened later by [Smith and Lewis \(2011\)](#) and consolidated by [Schad et al. \(2016\)](#) more recently. Since there are definitions for paradoxes in organizational literature, literature on IORs has not focused extensively on the concepts. Instead, literature on paradoxes in interorganizational settings concentrates on empirical studies investigating a specific paradox (e.g., cooperation vs. competition).

There are various paradoxes and research sub-streams in IOR literature. For instance, there are discussions about paradoxes relating to public administration (e.g., [Provan and Kenis 2008](#); [Saz-Carranza and Ospina 2011](#)) and strategy (e.g., [Austen 2018](#); [Panda 2017](#); [Czakoń 2009](#); [Loebecke et al. 1999](#); [Hallen et al. 2014](#); [Zheng et al. 2019](#); [Hoelscher 2019](#); [Prashantham et al. 2018](#)).

Despite the growing interest in paradoxes and tensions in interorganizational settings, to the best of our knowledge, no studies have organized and synthesized this literature. Therefore, we performed a systematic literature review to examine the management of paradoxes and tensions in IORs. We present the methodological procedures and results in the following sections.

3. Method

3.1. Sample Selection

In order to identify articles focused on paradoxes and tensions in interorganizational contexts, we searched the main Web of Science (WoS) collection using keywords related to

the context of IORs and the topic of interest. WoS is one of the most important databases for scientific research, and it includes publications in key journals in the management field from 1990 onwards (Falagas et al. 2008). We followed previous studies (Liao 2003; Durst and Runar Edvardsson 2012; Agostini et al. 2020) and searched for the terms tension, paradox and contradiction in publication titles, using the following syntax: ((tension* OR paradox* OR contradiction*)). In the topic field, we searched for terms used in other studies to identify the area of interorganizational relationships (e.g., Agostini and Nosella 2019; Agostini et al. 2020). Hence, we used the following syntax: ((alliance* OR network* OR "inter-organi* relationship*" OR "interorgani* relationship*" OR partnership*)). We also included language filters (English) and document type (article OR review OR editorial material). This search resulted in 1849 documents. Finally, we filtered the documents by "business and management" and "public administration", resulting in a sample of 205 documents.

The abstract for each document in the sample was analyzed, and documents that did not address the topic of this research were eliminated. This reduced the initial sample to 114 articles. The primary criterion for exclusion was papers that did not focus on an interorganizational context (58). For instance, the word network appears in the abstract of Zhao et al.'s (2020) study as one entrepreneur's resource for market entry timing. The second exclusion criterion was consideration of tensions unrelated to paradoxical elements (12). For example, Allen and Kim (2005) examined the influence of information technology (IT) on the video game industry. The word "tension" appeared to describe the relationship between the industries but with no relation to a paradox. Wang et al. (2021) analyzed tensions in governing megaprojects, but the tensions they analyzed were those arising when governance mechanisms that "make sense individually present inconsistencies in combination" (p. 800). Such articles were excluded as the tensions they analyzed did not derive from paradoxes.

As a final step, we read the full text of the 114 articles and excluded another 19 documents for the reasons identified above. Therefore, the final sample for analysis in this research consisted of 95 documents.

3.2. Content Analysis

The final 95 articles were read in full by the research team to identify the following: (a) the conceptual differences between paradoxes and tensions; (b) conceptual factors that explain paradoxical elements in the interorganizational context; and (c) the management practices adopted to manage paradoxes and tensions. Furthermore, the mapping process also included the following: the research question; the methodology (if empirical); the definitions of paradoxes or tension followed in the article; the paradoxes studied; the interorganizational relationship type (alliance, joint venture or network); the number of actors in the relationship; whether the relationship was formal or informal; the effects of tensions on performance; and the findings.

In the following sections, we present the results of our study, followed by a discussion and the implications.

4. Results

4.1. Descriptive Analysis

The 95 documents analyzed showed a predominance of empirical studies (84.2%) over theoretical articles (15.8%), which is likely to be due to the discussion about paradoxes having long been the focus of previous organizational studies and the concepts being consolidated (e.g., Smith and Lewis 2011). Additionally, some studies of interorganizational relations have conducted extensive explorations of previous research on paradoxes in management and consolidated the findings of these (e.g., Schad et al. 2016).

Figure 1 shows the temporal evolution of the sampled articles. The first article in our sample was published in 1997 by Uzzi, focusing on how social structure facilitates or derails economic action. There has been an increase in articles about paradoxes and

tensions in IORs in recent years, which may be associated with growing interest in this topic in the management field (Schad et al. 2016). More than half of all articles (52.6%) on the topic were published between 2016 and 2021.

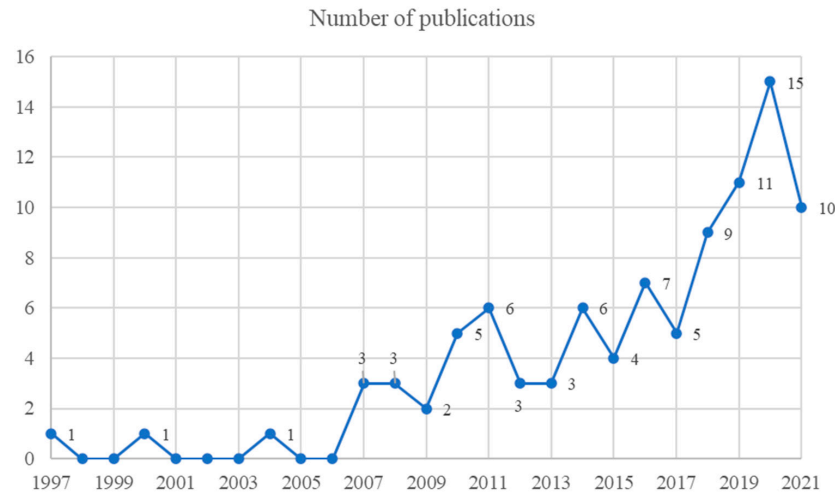


Figure 1. The temporal evolution of sampled articles.

In addition to the growing number of publications, we identified that there has been interest, on the part of researchers, in adopting a case study approach as a research strategy (68.8% of empirical studies), followed by quantitative methods based on surveys (16.3%) and secondary data analysis (8.8%). The characteristics of the subject matter studied may explain the preference for a case study approach, since case studies are recommended to capture complex social phenomena (Yin 2009).

We also identified the most influential articles in the field by analyzing the number of citations in the WoS core collection (January 2022). The most cited article was the seminal one by Uzzi (1997) mentioned above, which has made a significant contribution to IOR literature. The discussion of how embeddedness, social structure and networks shape organizational and economic outcomes explains the paradox of embeddedness. While embeddedness creates a fit with the environment, it can paradoxically reduce an organization’s ability to adapt (Uzzi 1997, p. 57). In addition to its focus on the paradox of embeddedness, the paper offers a broad explanation of the links between social structure and economic outcomes within organizational networks. This focus beyond paradoxes may help explain its significant number of citations (4852 in total). Table 1 presents the 10 most referenced documents in our sample.

Table 1. The most cited documents in the sample and the number of citations since 2017.

p	Reference	2017	2018	2019	2020	2021	2022	Citations per Year	Total Number of Citations
1	Uzzi (1997)	318	317	346	302	239	10	186.62	4852
2	Das and Teng (2000)	29	44	41	39	33	5	25.52	587
3	Jay (2013)	63	58	98	83	80	5	48.9	489
4	Raza-Ullah et al. (2014)	9	35	40	41	35	1	22.00	198
5	Fernandez et al. (2014)	8	32	43	30	20	2	19.00	171
6	Hutter et al. (2011)	28	17	22	13	18	0	12.83	154
7	Dushnitsky and Shaver (2009)	15	14	22	14	23	2	10.93	153
8	Tidström (2014)	8	26	26	38	22	2	16.89	152
9	Lin et al. (2013)	17	20	26	26	27	1	14.7	147
10	Lado et al. (2008)	8	10	17	15	12	1	8.87	133

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4.2. Conceptual Distinction between Paradox and Tension

Several authors presented the concept of paradox as the presence of elements that oppose and contradict themselves (e.g., [Schad et al. 2016](#); [Smith and Lewis 2011](#)). For instance, [Gao et al. \(2010\)](#) used [Lewis’s \(2000, p. 760\)](#) definition and assumed that the paradoxical situation referred to a situation comprising of “contradictory yet interrelated elements—elements that seem logical in isolation but absurd and irrational when appearing simultaneously”. [Jay \(2013\)](#), [Sharma and Bansal \(2017\)](#) and [Raza-Ullah \(2020\)](#) cited [Smith and Lewis \(2011\)](#), stating that a paradox involves contradictory yet interrelated elements that exist simultaneously and persist over time ([Smith and Lewis 2011](#)). Furthermore, following the same logic, [DeFillippi and Sydow \(2016\)](#) and [Vangen \(2017\)](#) adopted the concept of paradox defined by [Schad et al. \(2016\)](#) as a “persistent contradiction between interdependent elements” ([Schad et al. 2016, p. 6](#)).

Table 2 presents the definitions of paradox used by researchers in the studies analyzed.

Table 2. The definition of paradox in the literature.

Authors	Definition of Paradox
Das and Teng (2000)	“[T]wo contrary, or even contradictory, propositions to which we are led by apparently sound arguments” (van Heigenoort 1967, p. 45).
Ospina and Saz-Carranza (2010)	While paying simultaneous attention to inward and outward work, leaders confronted the inherent tensions associated with addressing contradictory but necessary requirements of network collaboration. Management scholars have defined these tensions as paradoxes.
Raza-Ullah et al. (2014)	Held that a paradox materializes when two contradictory yet interrelated dualities, such as cooperation and competition, are juxtaposed (Lewis 2000).
Gnyawali et al. (2016)	Defined paradox as “contradictory yet interrelated elements that exist simultaneously and persist over time” (p. 1).
DeFillippi and Sydow (2016)	Deemed a paradox to be a persistent contradiction between interdependent elements (Schad et al. 2016).
Vangen (2017)	Following a review of 25 years of paradox research in management science, Vangen used Schad et al.’s summarizing definition of paradox as a “persistent contradiction between interdependent elements” (Schad et al. 2016, p. 6).
Wilhelm and Sydow (2018)	Regarded a paradox as referring to contradictory yet interrelated elements that seem logical in isolation but seem absurd and irrational when they appear simultaneously (Lewis 2000, p. 760).
Raza-Ullah (2020)	Deemed a paradox to be “contradictory yet interrelated elements that exist simultaneously and persist over time” (Smith and Lewis 2011, p. 382).

The definition proposed by [Schad et al. \(2016\)](#) synthesized the idea of paradox as a contradiction and interdependence between elements. Therefore, any contradiction with interdependence between two or more elements may be considered a paradox. As anticipated, the most common paradoxes found in the literature review were cooperation vs. competition (e.g., [Gnyawali et al. 2016](#)), rigidity vs. flexibility (e.g., [Fang et al. 2011](#)) and exploration vs. exploitation (e.g., [Brown and Head 2019](#); [Dooley and Gubbins 2019](#); [Lin et al. 2013](#)). However, many others emerged as research interests, such as autonomy vs. accountability (e.g., [Vangen and Winchester 2014](#)), unity vs. diversity (e.g., [Saz-Carranza and Ospina 2011](#)), economic vs. social logic (e.g., [Gillett et al. 2019](#)) and short-term vs.

long-term orientation (e.g., Pajunen and Fang 2013). Table 3 presents the paradoxes with two or more occurrences in the sample.

Table 3. The paradoxes studied in the sample.

Count	Paradox	Authors
21	Cooperation versus competition	Chou and Zolkiewski (2018), Das and Kumar (2010), Das and Teng (2000), Dooley and Gubbins (2019), Fang et al. (2011), Fernandez and Chiambaretto (2016), Gnyawali et al. (2016), Hahn and Pinkse (2014), Hutter et al. (2011), Prashantham et al. (2018), Pressey and Vanharanta (2016), Qian et al. (2020), Rey-Garcia et al. (2021), Ritala et al. (2017), Stadler and Van Wassenhove (2016), Tidström (2014), Tóth et al. (2018), Thelisson (2021), van Duijn et al. (2021), Best et al. (2021), Munten et al. (2021), Runge et al. (2022).
10	Rigidity versus flexibility	Chou and Zolkiewski (2018), Das and Kumar (2010), Das and Teng (2000), Fang et al. (2011), Pajunen and Fang (2013), Pressey and Vanharanta (2016), Schmidt (2019), Vangen (2017), Vangen and Winchester (2014), Tóth et al. (2018).
8	Exploration versus exploitation	Brown and Head (2019), Dooley and Gubbins (2019), Konsynski and Tiwana (2004), Lannon and Walsh (2020a), Ritala et al. (2017), Remneland Wikhamn (2020), Lin et al. (2013), Rey-Garcia et al. (2021).
7	Short-term versus long-term orientation	Chou and Zolkiewski (2018), Das and Kumar (2010), Das and Teng (2000), Fang et al. (2011), Pajunen and Fang (2013), Pressey and Vanharanta (2016), Tóth et al. (2018).
6	Unity versus diversity	DeFillippi and Sydow (2016), Lindgren et al. (2015), Ospina and Saz-Carranza (2010), Rey-Garcia et al. (2021), Saz-Carranza and Ospina (2011), Sedgwick (2016).
5	Autonomy versus accountability	Dooley and Gubbins (2019), Rey-Garcia et al. (2021), Ritala et al. (2017), Vangen (2017), Vangen and Winchester (2014).
5	Knowledge sharing versus knowledge protection	Anokhin et al. (2011), Dushnitsky and Shaver (2009), Rouyre and Fernandez (2019), Stadler and Van Wassenhove (2016), Huang and Chiu (2020).
5	Value creation versus value appropriation	Elfenbein and Zenger (2017), Niesten and Stefan (2019), van Fenema and Loebbecke (2014), Remneland Wikhamn (2020), DeFillippi and Sydow (2016), Stefan et al. (2021).
4	Conflicting demands paradox	Gillett et al. (2019), Jay (2013), Pryor and Adkins (2019), Tura et al. (2019).
5	Economic versus social logic	Gillett et al. (2019), Prashantham et al. (2018), Sharma and Bansal (2017), Stål et al. (2021), Best et al. (2021), Ahmadsimab and Chowdhury (2021).
3	Trust versus distrust	Andersson-Cederholm and Gyimóthy (2010), Pajunen and Fang (2013), Pressey and Vanharanta (2016).
3	Embeddedness paradox (economic relations versus social relations)	Lazzarini et al. (2008), Meuleman et al. (2010), Uzzi (1997).
3	Centralization versus decentralization	Määttä and Eriksson (2015), Schmidt (2019), van Duijn et al. (2021).
3	Goal congruence versus goal diversity	Rey-Garcia et al. (2021), Vangen (2017), Galati et al. (2021).
2	Information sharing versus information protection	Six et al. (2007), Fernandez and Chiambaretto (2016).
2	Temporary versus permanent	DeFillippi and Sydow (2016), Stjerne and Svejenova (2016).
2	Standard versus standard flexibility	DeFillippi and Sydow (2016), van den Ende et al. (2012).
2	Proximity versus distance	Andersson-Cederholm and Gyimóthy (2010), Zaheer and Hernandez (2011).
2	Power versus trust	Horak and Long (2018), Sedgwick (2016).
2	Individualistic versus collective social structure	Dooley and Gubbins (2019), Pajunen and Fang (2013).
2	External R&D versus internal R&D	Aubert et al. (2015), Wang et al. (2017).
2	Complexity versus simplification	Vangen (2017), Vangen and Winchester (2014).

In contrast with the conceptual convergence regarding paradoxes, the concept of tensions does not present uniformity within the field of IORs. For instance, Fang et al. (2011) assumed that tension denotes two co-existing contradictory forces with conflicting goals. Similarly, Lannon and Walsh (2020b) followed Lewis and Smith (2014), defining tensions as “polarities that are interrelated aspects of a greater whole” (Lewis and Smith 2014, p. 134). Other literature reviews have already identified cases where tension has been taken to be synonymous with paradox (Gnyawali et al. 2016). Hence, in some studies, “tension” refers to the contradictory and interdependent relationship between two or more elements, also known as paradoxes. Consequently, as they are inherent to paradoxes, tensions emerge from the contradiction between paradox poles.

However, we also identified studies considering tensions as negative consequences emerging from paradoxes. Das and Teng (2000) reported that tensions emerge from the presence of contradictions and attempts to resolve these. Tidström (2014) stated that tensions represent the negative side of relationships involving competition, conflict, crises and problems. Tóth et al. (2018) conceptualized tension as discomfort emerging from the ambiguity of several sources. Finally, “tensions are usually understood as negative consequences, such as strain and conflict, that result from contradictory goals and interests between collaborating actors, and can hamstring, aggravate or even break up business relationships and network partnerships” (Tura et al. 2019, p. 221). We identified a theoretical stream that conceptualizes tensions as distinct from paradoxes, assuming that the paradox is a predecessor and the tension a consequence. Consequently, tension can emerge from a single pole or from both poles of a paradox. Table 4 presents the definitions of tension used in the sampled articles.

Table 4. The definitions of tension in the reviewed literature.

Authors	Definition of Tension
Das and Teng (2000)	Tension results from contradictions and attempts to resolve such contradictions.
Fang et al. (2011)	Tension denotes two co-existing contradictory forces with conflicting goals.
Tidström (2014)	Tensions represent a negative side of business relationships, as do conflicts, competition, burdens, crises and problems. In this study, tensions were related to conflicts.
Raza-Ullah et al. (2014)	Tension in cooperation comprises of both positive and negative emotions simultaneously. This emotional ambivalence results from conflicting cognitions concerning the consequences of cooperative relationships.
van Fenema and Loebbecke (2014)	A contradiction between intended and experienced value creation and distribution.
Gnyawali et al. (2016)	Felt tension is the actual state of cognitive and emotional stress experienced by the focal organization. It consists of strain (discomfort concerning the paradoxical situation) and conflict (friction or discord between partners).
Raza-Ullah (2020)	Tension is a widely used concept in cooperation research, described as a conflict, threat or risk (e.g., opportunism and knowledge stealth) that occurs because of the competitive dynamics between organizations.

Most researchers consider paradoxes and tensions as distinct phenomena. Gnyawali et al. (2016) described tension as a manifestation of the cooperation paradox in inter-organizational contexts. For the sake of clarity, we propose the concept of “paradoxical tension”, i.e., *a cognitive or emotional stress experienced by individuals or organizations as the result of a paradox. Paradoxical tensions cause discomfort and conflict, which may negatively affect*

interorganizational relationships, reduce effectiveness and even lead to dissolution. We specifically refer to paradoxical tension to differentiate these tensions from many other relationship tensions and conflict commonly found in IORs. This understanding of paradoxical tensions allows researchers to explore different practices to manage paradoxical elements in interorganizational relationships before and after tensions emerge.

4.3. Contextual Factors and Management Practices

After analyzing the sample, we found different contextual factors and management practices influencing the balance between paradoxes in IORs. According to [Carlson et al. \(2017\)](#), balance is the degree to which paradox poles are equal in strength. Management practices relate to firms' general practices to achieve better results ([Brito and Sauan 2016](#)). Previous IOR literature has identified that paradox management practices can help actors cope with tensions (e.g., [Henry et al. 2020](#)). Therefore, firms may influence paradoxical elements (e.g., actions to maximize/minimize knowledge sharing or protection) to improve performance through paradox-management practices. On the other hand, from the literature review, we identified the external environment, firms and IOR characteristics as contextual factors that may influence paradoxical elements and, consequently, the balance between them (e.g., [Dushnitsky and Shaver 2009](#); [Xu and Kim 2021](#)).

For instance, laws for intellectual property protection (IPP) contribute to knowledge sharing since they preserve proprietary rights ([Dushnitsky and Shaver 2009](#)). Interpersonal relationships ([Tidström 2014](#)) and previous interorganizational relationships ([Gillett et al. 2019](#)) may facilitate or challenge cooperation between firms. Other studies have identified knowledge asymmetry, institutional distance, firms' absorptive capacity and mutual commitment as contextual factors influencing the knowledge transfer-learning paradox ([Ho and Wang 2015](#)). Our literature review identified that contextual factors might include characteristics related to the external environment, partner firms and the IOR. Hence, contextual factors may affect paradoxical tension emergence and determine how such tensions should be managed and negative consequences avoided. Paradoxes can remain latent until changes in their environment trigger them ([Korkeamäki et al. 2022](#)).

The sampled articles showed that tension management can occur in two distinct phases: before tensions emerge (which we call "pre-tension management") and after tensions emerge (which we call "post-tension management"). In the pre-tension phase, there is only a contradictory relationship between interdependent elements (paradox), and management practices aim to prevent the emergence of tensions. Concern about managing paradoxical elements through actions before tensions emerge includes partner selection (e.g., [Jee and Sohn 2020](#); [Henry et al. 2020](#)) and formal contracts (e.g., [Lazzarini et al. 2008](#)).

In the post-tension phase, negative consequences and conflicts can emerge, resulting from contradictory and interdependent elements (paradox). The management practices aim to manage tensions to reduce their effects or eliminate them. The reviewed studies included practices such as the following: joint piloting; management commitment; negotiating activity scope; monitoring and learning; modifying organization practice ([AhmadSimab and Chowdhury 2021](#)); knowledge and information processes; alignment processes; joint decision-making; co-design and co-delivery processes; joint problem-solving; and co-engagement processes ([Best et al. 2021](#)). Although it is possible to identify many practices, their efficiency in dealing with paradoxical tensions may be related to the context.

[Saz-Carranza and Ospina \(2011\)](#) identified activities that network managers perform to address unity-diversity tension and assert that a paradoxical relation between unity and diversity exists since both are essential for network performance ([Saz-Carranza and Ospina 2011](#)). Tensions in the paradox between unity and diversity may appear because unity refers to "the state of being in accord, without deviation" ([Saz-Carranza and Ospina 2011](#), p. 331), and accordingly, actors contribute to homogeneity. Diversity refers to actors' demographic and cultural characteristics in the organizational context, such as the labor force, customers and competitors ([Saz-Carranza and Ospina 2011](#)). Network managers spend considerable time managing tension generated by the contradictory demands of unity and diversity.

Member characteristics, the existence of a main goal or cultural diversity between members may contribute to an imbalance between unity and diversity, requiring practices to balance these. [Saz-Carranza and Ospina \(2011\)](#) argue that certain types of activities performed by network administrative organization (NAO) staff help member organizations to find unity in diversity, which they name bridging, framing and capacitating. Consequently, Saz-Carranza and Ospina argue that the management of unity-diversity may contribute to network effectiveness.

[Fernandez and Chiambaretto \(2016\)](#) looked for control mechanisms that companies use to manage information-related tensions in cooperative R&D projects whose success is highly dependent on information exchange. They studied the manufacture of a dual system of telecommunications satellites. The study showed that management of information-related tensions depends on the nature of the information, i.e., whether it is both critical and appropriable. Hence, the information characteristic is an important contextual factor influencing the balance between the sharing-protection paradox. This contextual factor requires management practices to deal with emerging tensions. [Fernandez and Chiambaretto \(2016\)](#) concluded that formal mechanisms (e.g., contracts that define rules and penalties relating to the information shared between coopetitors, and formal procedures or structures to support the firms' strategies) and informal mechanisms (e.g., trust or reputation) are important for managing emerging tensions. Despite the importance of informal mechanisms, Fernandez and Chiambaretto found that the main practice to successfully manage the paradox between information sharing-protection was developing a dedicated information system (IS). Partners designed a common information system, but non-critical information was withheld from other partners to avoid the emergence of paradoxical tensions.

The studies by [Fernandez and Chiambaretto \(2016\)](#) and [Saz-Carranza and Ospina \(2011\)](#) both illustrate the importance of recognizing contextual factors that may influence the balance between critical elements of IORs. Although paradoxes may exist because of their nature, the contradiction between elements is objective. For example, though not recognized by IOR members, knowledge-sharing activities will promote a decrease in knowledge protection. Once shared, the knowledge is not protected. Hence, the paradoxical relation between contradictory elements is not a real problem in itself, but the tension is. Thus, the challenge resides in mapping the critical elements of success for the relationship and consequently the mapping of contextual factors that may influence these elements. Once paradoxical elements and related contextual factors are identified, tension management may focus on balancing the paradoxes to avoid tensions or practices to deal with emerging tensions.

4.4. The Effect of Tensions on the Performance of IORs

We found only a small number of papers dealing with the effects of tensions or tension management on the performance of IORs and member firms. [Raza-Ullah \(2020\)](#) sought to understand why paradoxical tension deteriorates cooperative performance and when such debilitating effects can be managed. He found that a blend of higher balancing capability and lower emotional capability produces a positive indirect effect of tension on performance (mediated by emotional ambivalence). Cooperative performance was captured by measuring (i) expected results, (ii) increased revenues, (iii) improved quality and (iv) access to new customers, products or services. [Lin et al. \(2013\)](#) investigated practices facilitating learning and knowledge transfer, leading to innovation ambidexterity and business performance. Innovation ambidexterity is the simultaneous achievement of incremental and radical innovation and represents a paradoxical relation between both poles. The results showed a positive association between innovation ambidexterity and business performance. [Ho and Wang \(2015\)](#) investigated knowledge transfer and learning processes in international strategic alliances. According to [Ho and Wang \(2015\)](#), knowledge protection is negatively related to absorptive capacity, which is positively associated with alliance performance. Consequently, knowledge protection indirectly affects alliance performance. Finally, [Huang and Chiu \(2020\)](#) highlighted that knowledge tension (sharing-protection)

affects the relation between management control and multinational enterprise satisfaction, decreasing the effects of management control on multinational enterprise satisfaction.

Built on the conceptual difference between paradox and tensions and considering the effect of contextual factors on paradox balance (whatever the paradox is), Figure 2 illustrates the relations found in the literature review. The following framework links contextual factors to balancing paradoxical elements, which may contribute to the emergence of tensions. Tension management occurs through practices that may be engaged in to avoid tension (pre-tension emergence) or to resolve it (post-tension emergence). The final relation relates tension to firms or relationship performance, as discussed in this section.

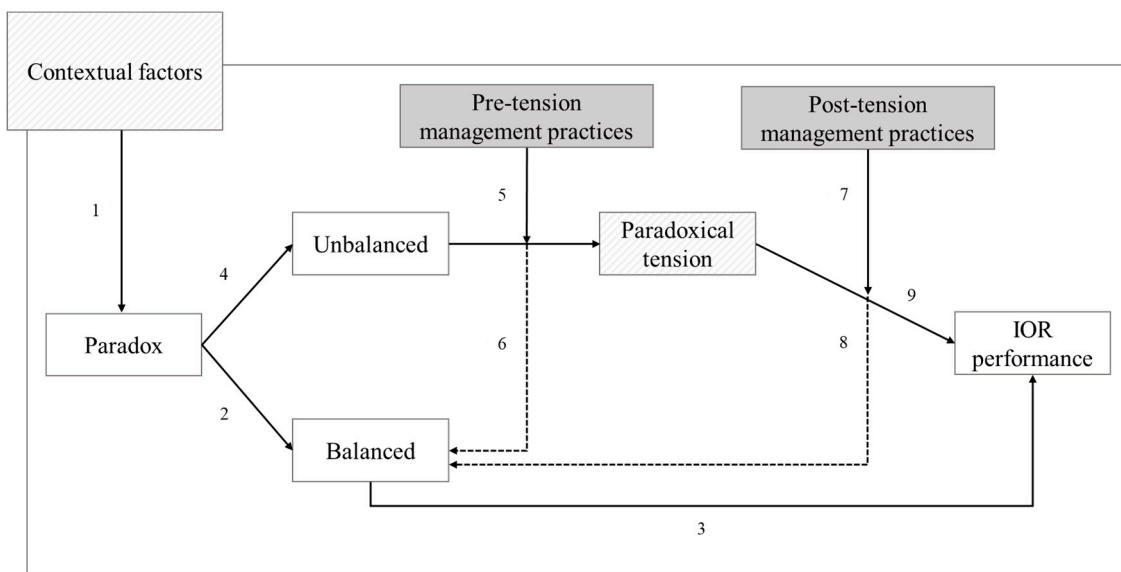


Figure 2. The framework linking paradoxes, tensions, contextual factors, management practices and IOR performance.

The framework derived from the literature review shows that contextual factors impact on how the members of IORs experience the two poles of a paradox (1). When both poles are balanced (2), the paradox does not escalate into tension, and there are no negative consequences for the performance of IORs (3). However, unbalanced paradoxes (4) require pre-tension management practices (5) to prevent or minimize paradoxical tensions and balance the paradox (6). If managers cannot avoid a paradoxical tension, post-tension management practices need to be performed (7) to balance the paradox and prevent negative consequences for IOR performance. However, members of IORs may experience negative repercussions in terms of tension in IOR performance (9) when both pre-tension and post-tension management practices do not effectively balance the paradox.

5. Conclusions

Initially, the aim of this research was to contribute to the literature by understanding the characteristics that differentiate paradoxes from tensions, identifying factors that contribute to the emergence of tensions in IORs, and identifying which management practices are used to avoid or reduce adverse effects. Firstly, the results indicate that although some authors do not distinguish between paradoxes and tensions, there is a distinction between these elements, and tensions may emerge from the relationship between contradictory elements. Secondly, the environment plays an essential role in defining tension emergence (Korkeamäki et al. 2022). Thirdly, some management practices can mitigate tension before and after it emerges, which may contribute to balancing paradox poles and prevent tension from harming IOR performance.

Our paper contributes to two streams of literature: that relating to paradoxes and that on interorganizational relationships. Firstly, we are contributing to the literature on

paradoxes and tensions by clarifying the distinction between both concepts. Though studies sometimes describe paradoxical situations in terms of tension, the independence of these terms is essential when it comes to investigating these phenomena. By conceptualizing paradoxes as a persistent contradiction between interdependent elements (Schad et al. 2016), we understand the emergence of tensions as resulting from paradoxes not being managed effectively. The tensions represent a negative side of business relationships, i.e., conflict, burdens, crises and problems (Tidström 2014). The distinction between paradox and tension helps us understand the dynamics behind the emergence of tension in IORs, which has not been widely discussed before. Moreover, we propose the concept of “paradoxical tension”, referring to those tensions that emerge from paradoxes, rather than general tension in IORs. This distinction is relevant since paradoxical tensions require management practices that specifically consider the contradiction between the paradox poles which caused the tension.

Secondly, we have been able to shed light on interorganizational relationships by elucidating the dynamic behind the emergence of tensions and establishing that all IORs exist in unique contexts. The singularity of managing paradoxes exists because paradoxes are subject to the influence of firms, relationships and external environmental characteristics, which vary from IOR to IOR. Having accepted the singularity of IORs, we cannot then identify a general set of tension management practices applicable to all situations. Hence, we propose that mapping contextual factors that affect particular IORs will allow managers to adopt practices to avoid emergence of tensions or reduce their adverse effects.

We would argue that paradoxes are not a problem *per se* but rather a persistent challenge in day-to-day IOR management. Instead, we recommend mapping contextual factors that may influence the balance between paradox poles, contributing to the emergence of tensions or even mitigating emergence of these. Our systematic review found only a small number of studies linking tension management to IOR effectiveness (e.g., Muradli and Ahmadov 2019). We believe that the lack of studies stems from the paradox alone not being enough to directly affect performance. Rather, the emergence of tension in one pole of a paradox may be a problem (e.g., lack of knowledge sharing or lack of cooperation).

6. Future Research

Through the systematic review, we also identified avenues for future research. Firstly, we found a small number of studies addressing the interdependence between paradoxes. Lannon and Walsh (2020a) identified some sub-paradoxes that may influence the emergence of tensions between recursive and adaptive practices in non-governmental organizations. Best et al. (2021) identified sub-paradoxes that contribute to the balance between social and economic logic in social purpose organizations participating in interorganizational relationships. Our analysis also showed a lack of studies linking the effects of tensions on firms or relationship performance. According to the literature, tensions may negatively impact on relationships, but few studies have tried to identify how harmful tensions are (Huang and Chiu 2020; Xu and Kim 2021).

Our findings also reinforce scholars' call for research into the dynamics of paradoxical tension (e.g., Szentes 2018), especially how actors dynamically respond to paradoxes (Henry et al. 2020). Since the tensions occur dynamically, managers need to focus more clearly on the challenge of coping on an ongoing basis (Raja et al. 2022). Dealing with tensions in a dynamic context requires adoption of management practices. Few studies have analyzed how management practices that avoid or minimize tensions lead to different tensions later. A better understanding of this could clarify the dynamic nature of tensions that emerge from paradoxes and how they change over time in IORs.

Finally, our analysis is broad and discusses paradoxes and tensions in general. The research framework (Figure 2) links elements found in our literature review. Future research may consider relationships among the elements that we have presented, investigating specific paradoxes (e.g., coopetition) and looking for common contextual factors in different forms of IORs. For example, identifying the main contextual factors influencing the balance between cooperation and competition may provide elements with which to build a general

framework for tension management in coopetition contexts. Similar to contextual factors, empirical investigation of management practices related to a specific paradox may provide elements that could form the basis of a general framework for tension management in particular contexts (e.g., R&D projects where knowledge sharing and protection seem relevant for the IOR's success). Since tensions may emerge from social interactions between individuals, teams or interorganizational partners (Korkeamäki et al. 2022), future studies could investigate corporate governance frameworks in greater depth (Jan et al. 2021) to mitigate the effects of paradoxical tensions in interorganizational relationships.

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