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## GOVERNANCE MECHANISMS IN TRIADS: THE ROLE OF AN INTERMEDIARY ACTOR IN NEW PRODUCT DEVELOPMENT

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### ABSTRACT

The purpose of this paper is to analyse the governance mechanisms adopted by an intermediary company to successfully manage new product development (NPD) in a triadic relationship formed by two Brazilian companies and a Chinese one. Qualitative research was conducted through a particular case study in the context of the offshore petroleum industry. The analysis was developed during and after data collection, using content analysis (Bardin, 2000) with *a priori* categorization adapted from Ateş, Van den Ende and Ianniello (2015). This paper contributes to the theory by pointing out the intermediary's ability to understand partners' characteristics and requirements to develop the relationship. The results highlight the importance of informal governance mechanisms in informational exchange throughout the process – commencement, maintenance, and even future inter-organizational relationships (IORs).

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## INTRODUCTION

Triads are inter-organizational relationships (IORs) composed by voluntary partnership agreements among legally autonomous organizations (Albers *et al.*, 2015). They are organized for a variety of interdependent activities and to achieve a common goal (Mishra *et al.*, 2015) such as new product development (NPD). Besides being a system with three actors, triads also involve, at the very least, analysis of the simultaneity of two dyadic ties among three interrelated actors (Vedel *et al.*, 2016). Nevertheless, much of the empirical research focus on dyadic relationships, with insufficient understanding of triadic dynamics (Siltaloppi and Vargo, 2017). Therefore, there are still significant gaps in terms of how to effectively govern and manage joint efforts in IORs (Wynstra *et al.*, 2015), especially with NPD in triads, the smallest possible network and consequently one with great potential to be a platform for the study of a wide range of IORs in a simplified format. Due to their diverse nature or role in NDP, triads in a supplier-non-supplier-buyer form have a low degree of internal cohesiveness and act as a set of connected organizations (Vedel *et al.*, 2016). Therefore, the purpose of this paper is to analyse the governance mechanisms used by an intermediary member in triadic NPD and to answer the following research question: what are the governance mechanisms adopted by an intermediary company to

successfully manage triadic NPD?. To reach this goal, we analysed the triadic relation between two Brazilian companies and a Chinese one collaborating in the development of new products for the offshore, naval cable market in the oil, gas, and fuel sector. The results contribute to the triad literature by showing that diverse kinds of informational exchanges are managed by the intermediary, as well as purposeful actions, to develop reputation and maintain the triadic relationship. This study also offers managerial contributions, extending understanding of the intermediate organization as an important player in triads.

## LITERATURE REVIEW

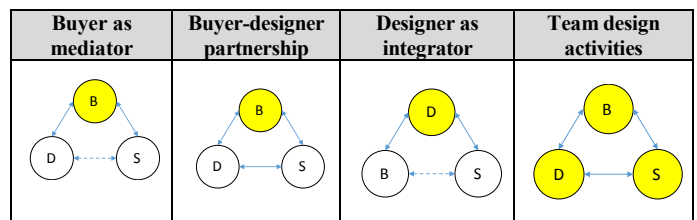
**Governance Mechanisms:** Inter-organizational governance concerns to structural or organizational measures designed to influence and determine the behaviour of organizational actors (Das and Teng, 1998). From a micro perspective, governance is characterized as the set of internal elements that organize and coordinate cooperation, also referred to as the governing mechanisms or coordination mechanisms (Capaldo, 2014). Governance mechanisms are tools that assist in the ongoing operation of a partnership. In general, they can be categorized into formal and informal (Lumineau and Henderson, 2012; Pilbeam *et al.*, 2012).

Formal one is described in the form of contracts and written rules and depend on control systems that structures the interaction of organizations (Tachizawa *et al.*, 2015). They serve as fundamental actions to reduce uncertainty, conflict, and opportunism in an IOR (Luo *et al.*, 2011). Formal mechanisms can be divided into those for coordination and control. Coordination mechanisms include (i) incentive and investment systems (Gimenez and Sierra, 2013); (ii) formalized operational procedures (Alvarez *et al.*, 2010; Lun *et al.*, 2015); and (iii) systems of authority (Tachizawa *et al.*, 2015). Formal control mechanisms include: (i) contracts and sanctions (Yang *et al.*, 2012) and (ii) formal control of processes (Heide *et al.*, 2014). Informal mechanisms are qualified by relationships, not by bureaucratic structures (Alvarez *et al.*, 2010). They are grounded in trust and social control and can influence the behaviour of members of IORs (Tachizawa and Wong, 2015). This category includes informal coordination and control mechanisms, such as (i) coordination practices; (ii) relational norms (Alvarez *et al.*, 2010); as well as (iii) informal mechanisms of cooperation (Cai *et al.*, 2009) composed by the dimensions of commitment, trust and joint actions, and informal social mechanisms (Hernández-Espallardo *et al.*, 2010) with the dimensions of culture and organizational values, and learning. Both formal and informal mechanisms are used to coordinate resources and mitigate the risk of relational exchanges (Chelariu and Sangtani, 2009). Thus, governance mechanisms allow organizational partners to manage their collaborative efforts in the IOR's formulation and operation (Albers *et al.*, 2016). Cao and Lumineau (2015) developed a qualitative and meta-analysis review to improve the understanding of the relationship between contractual and relational governance. The results of 33,051 IORs in 149 empirical studies revealed that trust, relational standards and contracts improve performance and relationship satisfaction, and together reduce opportunism. Triad governance, as a form of inter-organizational relation, is composed by a set of governance mechanisms (Albers, 2010; Albers *et al.*, 2016) for determining and influencing the behaviour (Das and Teng, 1998) of three organizations, whereby each one has a direct and reciprocal interaction with another one, also operating as an intermediary actor (Simmel, 1950).

**Triads:** Triadic business relationships are usually composed of a buyer, a seller, and an intermediary member (Holma, 2010). These three actors are connected and can communicate altogether or in dyads through social interaction (Havila *et al.*, 2004). Triads differ from dyadic alliances in several ways, but in terms of form, which is: how the triad relates to the context, how relationships influence each other and the strength of ties (Vedel *et al.*, 2016). A triad is "a specific type of relation where the actors must be involved in common coordinated activities, involving specific adapted and individualized processes in which each actor has its specific role and activities to perform" (Vedel *et al.*, 2016, p. 140). Based on two aspects of collectively, Vedel *et al.* (2016) differentiated types of inter-organizational triads: cohesion and the capability to function as a single organization. A high degree of internal cohesiveness refers to triads formed by linked actors with strong ties among them, called a group-like form. On the other hand, triads that have low degree of cohesiveness (internal) function as a set of connected actors. The capability to function as a single organization is categorized as a coalition, which exhibits a high degree of cohesiveness. It is a result of strong and closure ties. Vedel *et al.* (2016, p. 143) described the formation of a coalition as "a power balancing strategy, which involves the formation of direct ties between actors who have been indirectly linked. Thus, actors in a coalition are linked or associated". However, when ties are strong, but lack a triad closure structure, this is categorized as a hub-driven strategic network. It involved partners contribute to the business operation through a hub-firm. Sitaloppi and Vargo (2017) conducted a literature review spanning multiple academic disciplines, which identified three types of triadic relationships: (i) brokerage between two others. It is focused on the action of the third party; (ii) mediation form highlights how dyadic relationship is affected and affects by a relationship with a third party; and (iii) coalition type that is focused on the evolution and configuration of ties in the triad. Brokerage form refers to the "behaviour by which an actor influences, manages, or

facilitates interactions between other actors" (Obstfeld *et al.*, 2014, p.141). The review by Sitaloppi and Vargo (2017) highlights three brokerage orientations. Each one is classified according to the form that the third part interferes in the relationship between the other two: (i) in *tertius iungens*, the third forms a new connection between the two; (ii) in *tertius gaudens*, the third maintains the other two separated; and (iii) the non-interfering conduit facilitates interactions between the other two. This interaction don't interfere on relationship between them.

Ateş *et al.* (2015) studied inter-organizational coordination patterns in new product development projects (buying firm, design agency and component supplier), pointing out that the buyer in the IOR tends to be presented as a network coordinator. However, there is also the possibility that another agent in the triad performs this role. These results demonstrate that when buying companies outsource their design to agencies and involve other suppliers in new product development projects, four types of inter-organizational coordination approaches could be assumed: buyer as mediator, buyer-designer partnership, designer as integrator and team design activities, as illustrated in Figure 1. In the buyer as mediator type, the mediator is the coordinator and communicates with the supplier and the design agency to a moderate extent. Also, there is almost no direct communication between the supplier and the design agency; in the buyer-designer partnership, the buyer is the coordinator between the suppliers. The intensity of communication between the design agency and the buyer are higher, but the design agency is more involved throughout the process. In the designer as integrator type, the design agency is the coordinator between the supplier and the buying company and holds the decision-making authority; in the team design activities, each party is heavily involved in the new product development process (Ateş *et al.*, 2015). These four coordination types (Figure 1) are characterized by distinct levels of involvement, communication intensity and locus of control (Ateş *et al.*, 2015).



Note: levels of involvement and communication intensity are represented by a continuous (elevated level or intensity) line, or a discontinuous (low level or intensity) line; yellow circles represent the locus of control.

Source: Based on Ateş *et al.* (2015).

**Figure 1. Four types of inter-organizational coordination in new product development projects**

Triads that focus on brokerage (the action of the third between two others), functioning as a set of connected actors. In fact, there is a low degree of internal cohesiveness among them, and they use formal and informal governance mechanisms (Lumineau and Henderson, 2012; Pilbeam *et al.*, 2012; Tachizawa and Wong, 2015) as tools, which assist in the ongoing operation of the partnership. Thereby, the aim of this paper is to analyse the governance mechanisms adopted by an intermediary, such as the categorization described by Ateş *et al.* (2015) of a designer as integrator, to successfully manage a triadic NPd.

## METHOD

Qualitative research was conducted through a particular case study strategy. The unit of analysis was the relationship among three organizations: LEB, GXD and MBB. LEB is the main Brazilian supplier of anchoring ropes for the offshore and marine industry. GXD is one of the biggest Chinese companies in the field of industrial polyester yarn. GXD is an expert in the production and sale of modified polyester fibres and differential polyester

filaments. MBB is a Brazilian company focused on technology projects related to chemical and process engineering, biotechnology and environmental engineering, and the commercialization of high-performance yarns, fibres, and technical fabrics for industrial applications. MBB operated as an export agent for GXD yarns' Brazilian market from 2006 to 2010. LEB was created in 2010 when the Brazilian oil company Petrobras demanded other anchorage cable suppliers in Brazil. In 2011, MBB and GXD signed a formal contract for the development of a product with a Marine Finish certificate. During this period, MBB approached LEB about development of a new product (GHQ yarn) to increase its productive performance in the supply of anchoring cables to the offshore and marine industry. The GHQ yarn was finalized in 2014 and presented at the OCEANS'13 MTS/IEEE Conference in Bergen, Norway (2014) and at the Offshore Technology Conference in Rio de Janeiro, Brazil (2015). This NPD in triadic partnership was chosen because of its focus on the action of the third between two others (brokerage) and for the designer as integrator feature (Ateş *et al.*, 2015), where an agent company occupies the designer designation. In addition, the chosen case proved appropriate for revealing the governance mechanisms used by a non-buyer company in a triadic relation formed by different countries (Brazil and China).

**Data Collection Procedures:** An interview protocol was used, non-participant observations and document analysis. Table 1 summarizes the collected data:

**Table 1. Description of collected data**

Data	Description
Interviews	3 semi-structured interviews with key informants: Director of MBB, General Manager of LEB and Export Manager of GXD.
Observations	2 meetings between MBB and GXD to address market demands, process improvements and customer feedback; 1 meeting between MBB and LEB to address shipping schedules, pricing, and development demands; 2 informal meetings between MBB and GXD in China.
Documents	Product certifications, formal business contract, technical reviews, e-mails, institutional websites, articles, export, and productivity reports.

The interview protocol was based on that of Ateş, Van den Ende and Ianniello (2015) as follows: (i) questions that approached the project details. (i.1) What was the inter-organisational project about? (i.2) How successful was the project in terms of coordination and collaboration with other organizations (parties)? (ii) questions that approached the involvement of organizations and their roles. (ii.1) Which organization was the project coordinator/ leader// integrator? (ii.2) What were the roles of each organization? (iii) questions that approached the governance mechanisms. (i.1) Was there an atmosphere of trust among the organizations? (ii.2) Was everything defined in the contract? (iii.3) Was this project coordinated in a more formal or informal way? (iv.4) What was the content, frequency, and form of communication between organizations?

The interviews were conducted between the end of 2016 and the beginning of 2017, involving the people most knowledgeable about the projects to ensure reliability of answers. Each interview lasted from twenty to thirty minutes. It was recorded and later transcribed in a single document for analysis. The interview protocol was translated into English, then from English to Chinese and, finally, reverse translated to check its integrity. The non-participant observations were conducted between October and December 2016. These meetings ranged from 2 hours and 30 minutes to 3 hours and 10 minutes in length. During meetings, extensive field notes were taken to support data analysis and construction of research memorandums. The observed aspects: were exchange of information, level of informality, signs of conflict, attitudes, and dimensions of inter-organizational relationships such as trust, cooperation, reputation, legitimacy, and power asymmetry.

**Data Analysis:** Data analysis was based on contents (Bardin, 2000) of the dimensions defined *a priori* by the theoretical framework and protocol adapted from Ateş *et al.* (2015). To establish the validity of the data collection and reliability of the evidence, triangulation was used (interviews, observations, and document analysis) (Yin, 2009). In addition, a study database was used (notes, files, records of interviews and observations, and digitized internal documents). Although interpretation of the data was undertaken on completion of the collection, it was informed by interpretative inferences throughout the research process.

## RESULTS

### Project Details and the Involvement of Organizations and Their Roles:

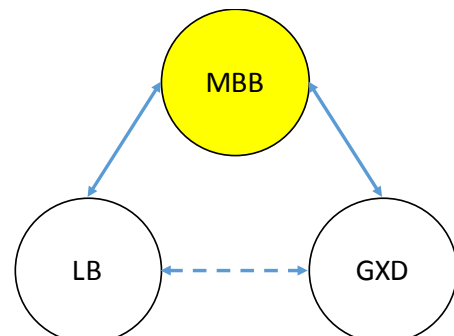
Interviewees highlighted the intense participation of all involved organizations in the new product development (GHQ yarn). At the beginning of the collaborative project, the partners knew about each other's competences and the requirement to develop a new product. According to MBB's Director: "There was a mutual interest in developing a differentiated product that would increase market share, marketing margins for Guxiandao and also allow a better commission for MBB." The view expressed by LEB's General Manager when interviewed was: "There was a prior development process on the part of MBB, which already understood and knew the company's needs beforehand." The main motivations that led each company, individually, to participate in a collaborative innovation project are quite different, as follows:

[Our motivations] have an economic nature – differentiated product with better margins and allowing an increase in Guxiandao's market share in the anchoring ropes segment. (MBB Director)

Due to the serious competition of producers (polyester yarn), many companies try to find an unusual way to meet (to enter) world competition; try to find differentiated products to capture more value. (GXD Export Manager)

[We expect] differentiation in the market – greater denier and greater tenacity compared to the products available at the time. (LEB General Manager)

At the beginning of the collaboration project, the partners were assessed according to their organizational reputation and legitimacy. According to MBB, "Guxiandao had the most advanced technology in the production of industrial yarns and increased installed capacity in the world, but it is dedicated to large volumes of 'low-margin' commodity yarns." In addition, GXD highlighted that "The partnership with MBB had started step by step. Together we reached the certifications, due to the prior knowledge of MBB." Over time, this increased the trust between the parties. LEB pointed out that "Trust in the qualification of the instalments was crucial for the development of the relationship, since MBB is a qualified company and has already been in the market for a long time."



**Figure 2. Partners' roles in the triad studied**

Figure 2 shows the partners' roles, with the triad's levels of involvement and communication intensity represented by a

continuous (levated level or intensity) line, or a discontinuous (low level or intensity) line. The yellow circle represents the locus of control in the triad studied.

**Governance Mechanisms:** Considering the formal governance mechanisms, GXD's Export Manager advised that the formal contract was the main mechanism of the IOR between GXD and MBB: "This formal contract was signed in 2011 for the development of a product with a Marine Finish certificate, but now it is not necessary." On the other hand, there is no formal contract with LEB: "The partnership since 2012 is maintained because GXD continues to offer a high-quality product at a competitive price." When interviewed, LEB's Export Manager stressed that "The clauses of the negotiation, if you can call it that way, were LEB's confidence in MBB's technical expertise in offering a competitive product in terms of quality and price, but especially with its differentiation in the commodity market." The good business relationship is transferred to the collaborative innovation project.

NPD in a triad did not have formal control or coordination mechanisms, such as (i) incentive and investment systems (Wathne and Heide, 2004; Datta and Roy, 2013; Gimenez and Sierra, 2013); (ii) formalized operational procedures (Alvarez et al., 2010; Lun et al., 2015); (iii) systems of authority (Tachizawa et al., 2015); (iv) contracts and sanctions (Yang et al., 2012) and (v) formal control of processes (Heide et al., 2014). Informal mechanisms of cooperation (Cai et al., 2009) composed by the dimensions of commitment, trust, and joint actions, were evidenced by the relational trust that permeates the entire process. When the representatives were asked about what made the project a successful development in terms of collaboration and coordination with other organizations, their answers highlight trust in the competence and coordination action of MBB. This strengthens the argument of Tachizawa and Wong (2015), whereby trust influences the behaviour of members of an IOR – in this case, by the waiver of the contract.

Informational exchange among the partners played a key role in fostering the NPD's effectiveness. The information exchanged varied from technical issues to market aspects, such as competitors. The LEB General Director commented that "Technical information in terms of testing and sample analysis is shared." Also, according to MBB, "LEB customer information helps in our business strategy positioning." Furthermore, the GXD Export Manager stated, "We maintain a close relationship with MBB and we share the information every day. In fact, we are a wonderful team." This is highlighted in two dyadic relations: GXD – MBB and LEB – MBB. The intermediary allowed and helped maintain the relation through a set of actions, which are related to company reputation in the sector studied: development of technical papers, participation in technical conferences and institutional meetings, as in the Brazilian Association of Technical Standards meeting (ABNT – *Associação Brasileira de Normas Técnicas*) convened to define rules for mooring ropes in the offshore petroleum industry. MBB worked as an integrating organization. It addressed the needs of the buying firm, not just concerned with "the available technology and available suppliers' capabilities, to provide a solution to a complex problem of the buying firm" (Ateş et al., 2015, p.1531), but also with communication improvement within the triad. Reports and observations point to an improved relationship between the companies. GXD intends to open an industrial polyester plant in Brazil. This plan will be developed with the help of MBB and is expected to be operational from 2019. Joint actions enhance perception of the relationship's success and strengthen relations beyond organizational boundaries. One example is the joint development and presentation of technical articles by representatives of LEB and MBB at technology conferences.

## DISCUSSION

The findings of this study highlight that MBB acts as an intermediary, which strengthens the relationship and establishes parameters for the development process (brokerage). This evidence reinforces the assumptions of Ateş et al. (2015) that the coordinating actor of the

triad could not be the buyer company, but the intermediary in the case of a buyer-non-supplier-supplier triad. In addition, this study reinforces the authors' results since, in the case studied, long-term relationships and trust were shown to be crucial elements in creation and maintenance of the IOR. Although the brokerage (Sitaloppi and Vargo, 2017) triadic type has become virtually synonymous with the *tertius gaudens* conception the social network literature, this type entails more than just the third partyholding the other two apart. According to Obstfeld (2005), *tertius iungens* (another brokerage triadic type by) enables broker to create new relationships between (among) previously disconnected actor (s) in order to facilitate innovation and knowledge creation – in other words, NPD.

The *tertius iungens* is related to the creation of new ties, whereby knowledge creation depends on the non-substitutability (i.e., organizations with complementary skills and knowledge) of the organizations connected (Obstfeld et al., 2014). In this study, these ties were created by informational exchange in two dyadic relations: GXD – MBB and LEB – MBB. Informational exchange is divided into three sets. In the case of the buyer and intermediary information about the market, this informational exchange leads to new raw material demands, required to solve a specific problem exposed by the final customer. With the intermediary technical information, the intermediary organization manages information received from the market and buyer and figures out with the supplier possibilities and restrictions associated with production of the new raw material. In the case of the supplier, intermediary and buyer technical and empirical information the supplier produces samples and discusses technical parameters with the intermediary and buyer. The intermediary performs distinct roles in informational exchange and facilitates communication between the partners to develop a new product.

There is no formal contract between the three partners, but control mechanisms are based on relational governance, allowed by the intermediary's reputation in the offshore petroleum industry. Also, control mechanisms are influenced by the role of interpersonal relationships and relational trust, which are present in all discussions among partners. The study also supports the claim that, in international business relationships, the manufacturer and foreign intermediaries play key roles (Havila et al., 2004). Furthermore, the study advances understanding of social interactions that consider the perspective of an Eastern firm, where the relationship provides the fundamentals for business activities as described by Wynstra et al. (2015).

## Final Remarks

The findings of this study highlight the key role of an intermediary in triadic relationship and its ability to understand the partners' characteristics and requirements to develop the relationship. The study makes contributions on both a theoretical and managerial level. In theoretical terms, considering the context of NPD in triads and the intermediate partner's role might improve the field of IOR. Firstly, it shows that the "designer as integrator" type (Ateş et al., 2015) could or must manage distinct kinds of informational exchanges to develop and maintain the triadic new development. Secondly, it describes how the broker in brokerage (Sitaloppi and Vargo, 2017) triadic type creates new relationships between previously disconnected actors in NPD. Ties were created by informational exchange in two dyadic relations: GXD – MBB and LEB – MBB (the buyer and intermediary information about the market; the intermediary technical information; the supplier, intermediary and buyer technical and empirical information) and depends on the non-substitutability of organizations. The buyer does not have competitors with the same product performance in the global market; the supplier has the recent technology patent, and the intermediary has exclusive representation in the economic sector for oil, gas, and fuels in the Brazilian market. This successful relationship is mainly managed by intermediate actions managing and coordinating NPD in the triad. We also offer managerial contributions by extending understanding of the

intermediary role in triads. This role is constituted by actions that develop a technical reputation and improve the relational trust among partners. This allows the intermediary function of an integrator in the supplier-intermediary-buyer relation. Greater understanding of the governance mechanisms adopted by an intermediary organization (not a buyer or supplier) to coordinate the development of new products in triadic relationships, increases the possibility for success in this kind of IOR. We suggest future longitudinal studies that analyse the dynamic relationships in IOR. Such studies could identify whether there are factors that affect the displacement of intermediary status in the relationship. On the other hand, comparative studies between triads in distinct contexts could shed more light on contextual factors that define the role of the intermediary and its efforts to propel and maintain the partnership goals. This study did not aim to explore in depth the cultural diversity of the companies involved. However, we recognize the importance of this element and the limitation of the analysis by disregarding it.

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