

Collaboration in cluster-based firms as a source of competitive advantage: evidence from a footwear cluster

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Abstract

Paper aims: To analyze the potential to generate relational rents in cluster-based firms located in the Northeast region of Brazil.

Originality: We developed a conceptual framework based on the primary sources of relational rents considering the characteristics of clusters.

Research method: An explorative case study. Data were collected mainly by semi-structured interviews.

Main findings: We developed propositions, demonstrating that geographic proximity has a strong influence in diverse sources of rents. Business trust and reputation have an impact on the development of relational rents. Absorptive capacity is a preservation mechanism since it allows firms to understand and absorb knowledge and information.

Implications for theory and practice: Significant contributions are the research propositions developed through empirical evidence that can be testable in large scale. Cluster-based firms could share different types of resources bringing competitive benefits. Decision makers should make sure that when sharing internal resources it provides an additional advantage.

Keywords

Industrial cluster. Relational rent. Absorptive capacity. Geographic proximity.

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1. Introduction

Current literature has emphasized the importance of collaboration and indicated that relationships in a network results in advantages (Chassagnon, 2014) such as risk sharing (Kogut, 1988), innovations (Molina-Morales & Exposito-Langa, 2012), reduction of transaction costs (Kalwani & Narayandas, 1995), profit and competitive advantage (Cao & Zhang, 2010, 2011; Li & Geng, 2012; Bonatto et al., 2017).

A collaborative advantage is something that resides not within an individual firm, but across its boundaries through its inter-firm relationships (Dyer, 1996; Dyer & Singh, 1998; Kanter, 1994). It indicates that a partnership is essential for improving firm's performance and the ability to create and sustain fruitful collaborations gives to a firm a significant competitive power (Kanter, 1994; Bonatto et al., 2017).

Recently studies have using different theories to explain the competitive advantage from inter-firm relationships, such as transaction cost economics, resource-based view (RBV), dynamic capabilities, knowledge and organizational learning (To, 2016). In industrial cluster context research focusing on areas such as economics and management have emphasized the positive impact of relationships on learning and innovation (Hervas-Oliver & Albors-Garrigos, 2009; Molina-Morales, 2001; Molina-Morales & Exposito-Langa, 2012) and the knowledge transferred within the clusters (Connell et al., 2014; Hoffmann et al., 2014; Niu, 2010).



Through RBV, Hervás-Oliver & Albors-Garrigós (2007) and Li & Geng (2012) identified resources, capabilities, and their impact on firms' performance and competitive advantage. Literature has also focused on exogenous factors that facilitate the growth and development of the cluster (Niu, 2010). However, the cluster success is often related to endogenous factors such as trust between firms and institutions, the flow of resources and information (Niu, 2010).

Value creation can be developed through shared resources between clustered firms (Gretzinger & Royer, 2014). This fact can be explained by the relational paradigm (Dyer & Singh, 1998), once in industrial clusters firms keep frequent and multiple collaborative relationships. Hence, the relational view (Dyer & Singh, 1998) provides a more comprehensive theoretical background to explain competitiveness in clusters.

According to the relational view (RV), the collaborative advantage comes from relational rents; a common benefit reverted to partners through the combination, exchange, and co-development of idiosyncratic resources (Dyer & Singh, 1998). Each partners acting collaboratively generate this type of rent (Cao & Zhang, 2010, 2011; Dyer & Singh, 1998; Lavie, 2006). To develop relational rents cluster-based firms must invest in specific assets, in knowledge sharing routines, complementary resource endowments, and effective governance.

Current research has pointed to the importance of value creation between cluster-based firms. This article follows this research flow, analysing the potential to generate relational rents in the relationships between cluster-based firms in a footwear cluster located in Paraíba, a State in the Northeast of Brazil. Thus, this paper seeks to answer the following question: how could firms operating in industrial clusters reach relational rents? What interorganizational resources could influence the development of these rents?

We choose this cluster because of its economic importance; the State is considered the second largest exporter of footwear in Brazil (Santos & Nascimento, 2012). Through the analysis, we develop propositions potentially testable in a larger scale.

Researchers that adopt the relational view focus on inter-firm relationships, especially in supply chains and strategic alliances. Thus, this article can bring results that indicate that the exploration of existing relationships in clusters brings new knowledge that has been neglected. Understanding the role of critical sources of relational rents can also contribute to the success of regional clusters for knowledge exchange. Thus, this can be an important research endeavor (Larty et al., 2016). Besides, focus on endogenous factors and how they contribute to expanding collaboration between firms can improve cluster competitiveness, business productivity, drive innovation, and stimulate the development of new businesses, which contribute to local and regional development.

This paper has six sections. Following this introduction, the second lays out on the theoretical support. The third section expounds the research methodology, gives details of the case studies and data analysis tools for the empirical analysis. The fourth and five sections present the cases and undertake a cross-case analysis, comparing and contrasting sources of relational rents according to the interpretative dimensions identified in the conceptual framework, which leads to the development of propositions. Finally, the sixth part discusses the study's main conclusions, contributions, limitations and future lines of research.

2. Theoretical background

A cluster can be defined as a geographic concentration of interconnected firms that have vertical and horizontal relationships with specialized suppliers and institutions, such as universities, trade associations, research centers, etc. (Porter, 1990; Lawson, 1999). Cooperation between firms in a cluster tends to develop more than firms outside of the network (Zhang & Li, 2008). Thus, "[...] geographic proximity may generate advantages that spring from regular face-to-face contacts which are more easily realized between nearby agents" (Lublinski, 2003, p. 454).

The literature has provided several agglomerative benefits associated with geographic proximity (Cainelli et al., 2006) such as sharing information (Zhang & Li, 2008); efficiency due to the ability to use the skills of its suppliers, customers and competitors (Fuensanta et al., 2015; Liao, 2010; Zhang & Li, 2008); interpersonal networks characterized by a high level of trust, which is difficult to imitate and replace (Zhang & Li, 2008). Lublinski (2003) also states that trust may be more easily developed between geographically proximate agents.

Therefore, geographic proximity facilitates the relationship between firms, and it is a rare resource that is difficult to imitate (Rungtusanatham et al., 2003). This proximity facilitates the transfer of tacit knowledge among firms (Li & Geng, 2012); and stimulate the emergence of new businesses influencing in the growth and development of the network (Niu et al., 2008). This relationship can provide strategic options regarding resource complementarity, technological know-how, and capacities (Niu et al., 2008; Rungtusanatham et al., 2003).

As a result, cluster-based firms have some advantages (Li & Geng, 2012), such as new technologies and innovations, information and resources that lead to the development of unique capabilities, as advocated by

RBV (Barney, 1991; Niu et al., 2008; Porter, 1990). In this way, firms operating in industrial clusters can access different types of resources (Molina-Morales, 2001; Wu et al., 2010), and various nomenclatures are used to characterize these resources (Table 1). Analyzing the different resources, we verified that they could be grouped considering their similarities (Table 1).

Table 1. Interorganizational resources.

Resource	Definitions	Authors	Joint Definitions
Asset specificity of the relationship	Specialized resources that the firm develops or has in partnership.	Williamson (1985)	
Network resources	Sources of valuable information that can be accessed by partners.	Gulati (1998), Lavie (2006), Dyer & Hatch (2006)	Asset specificity of the relationship: Formal or informal interactions between different firms in a network and are relating to acquiring, complementing or improving resources.
Shared resources	Shared resources that are responsible for relational rents.	Lavie (2006)	
Relational resources	Responsible for building and maintaining long-term relationships with key suppliers and customers. These relationships are difficult to replace.	Wong & Karia (2010)	
External resources	Obtained through alliances and acquisitions.	Lin & Wu (2014)	
Complementary resource	Have great synergy and generate more profitability than if they were used individually by the network firms.	Dyer & Singh (1998)	
Accessible resources	Do not belong to the firms of the network, but can be accessed by them.	Sanchez & Heene (1996)	Systemic resources: Do not belong to any individual firms, but if accessed by them, impact indistinctly on the performance
Systemic resources	Do not belong to the individual firms, but act on the performance of all the members of a network; there is no rivalry in its use, and can be shared by all.	Wilk & Fensterseifer (2003)	
Collective Resources	Shared intangible resources and capabilities in an interorganizational relationship. Do not belong to any firm as well cannot be accessed by other firms.	Molina-Morales (2001)	Restricted resources: Do not belong to any individual firm but can be accessed by a set of firms; it can have any causal ambiguity.
Restricted access resources	Do not belong to any firm; however, can be accessed in a privileged way only by a set of firms in a network.	Wilk & Fensterseifer (2003)	

Source: Authors.

As proposed by Porter (1990), cluster-based firms may reach competitive advantage due to the geographic proximity of agents, access to the labor market, suppliers, support institutions, information flow among agents, government incentives and innovation, which arise from the interorganizational resources described in Table 1.

The RBV considers that heterogeneous resources belonging to a single firm that are valuable, rare, difficult to imitate and exploited by the firm (characteristics of the VRIO model - Value, Rarity, Inimitability, and Organization) are the main responsible for the development of competitive advantages (Barney & Hesterly, 2007). Recently, RBV has been applied in the context of alliances and others networks, and Lavie (2006) call this extension such as extended resource-based view (ERBV). ERBV and RV are similar; both theories consider that the strategic resources that are beyond the boundaries of firms can be used to create relational rents or specific rents of collaboration, also emphasizing the trust in these relationships (Dyer & Singh, 1998; Lavie, 2006; Rungtusanatham et al., 2003).

Primary sources of profit and relational rents for cluster-based firms can be extracted from specific assets, knowledge sharing routines, complementary resources, and reduction of transaction cost through effective governance (Dyer & Singh, 1998). Following, we describe in details these sources of rents.

2.1. Investments in specific assets

These investments and, consequently, asset specificity (site, physical or human specificity) have a relevant role in the relationships between firms for the development of competitive advantages. Although the level of asset specificity between firms in a transaction is equal, Dyer (1997) states that transaction costs can vary. The author says that the governance structure relates to both transaction costs and incentives for the adoption of value creation actions. Thus, agents can make use various strategies, either about the specificity of assets or the types of safeguards that will be adopted.

Networked firms can reach abnormal rents when making joint investments (Williamson, 1985; Dyer & Singh, 1998; Gulati, 1998; Lavie, 2006; Dyer & Hatch, 2006; Wong & Karia, 2010; Lin & Wu, 2014). According to

Lavie (2006), these investments can generate favorable contractual agreements and reduction of opportunistic behavior. Due to geographic proximity, cluster-based firms can also reduce costs once they may have a specificity of the region, physical assets, and human assets (Williamson, 1985). These specificities are sources of relational rents contributing to the collaborative advantage of cluster-based firms. Thus, those firms can access systemic and restricted resources (Wilk & Fensterseifer, 2003). In addition, trust between companies (as explained later) contributes significantly to investments in specific relationship assets, making firms share costs and risks associated with such investments (Kogut, 1988; Matopoulos et al., 2007; Zhang & Li, 2008; Anbanandam et al., 2011; Niu, 2010; Liao, 2010; Day et al., 2013).

2.2. Effective governance

Dyer & Singh (1998) consider two types of governance: outsourcing agreements (through legal contracts) and formal and informal agreements, mediated by the members of the relationship themselves. Formal agreements seek to align the economic incentives of the parties involved; the informal agreements are based on trust or reputation and are called by some authors as relational governance structures (Liao, 2010).

The effective governance is related to both transaction costs and incentives for the adoption of value creation actions. Therefore, agents may use different strategies to prevent opportunist behaviors (once, in industrial clusters, firms have their historical, preferential, and institutional particularities), either concerning the specificity of assets or the types of safeguards that will be adopted (Dyer, 1997). Thus, taking effective governance, the transaction costs could be reduced influencing in the increasing the investment plots in specific assets, which can generate collaborative advantages (Dyer, 1997).

2.3. Knowledge sharing routines

These routines can be the main sources of new ideas and information that also contribute positively to higher rents (Dyer & Singh, 1998). Routines refer to interactions between firms that allow them to transfer, recombine, or create specialized knowledge. The ability or capacity to extract knowledge from external sources (appropriability), even informally, may be related to prior knowledge that a firm (or bundle of firms) possesses. Cohen & Levinthal (1990, p. 128) call this of absorptive capacity, which concerns the “[...] the ability to recognize the value of new information, assimilate it, and apply it to commercial ends”. For the authors, most innovations result from borrowing from others, that is, from tangible or intangible resources.

2.4. Complementary resource endowments

Complementary resource endowments can be defined as “[...] distinctive resources of partners that collectively generate greater rents than the sum of those obtained from individual endowments of each partner” (Dyer & Singh, 1998, p. 666). Thus, if partners combined resources, the result is a synergistic effect whereby the combined resources become more valuable, rare and difficult to imitate, and this fact has a positive impact to generate relational rents (Dyer & Singh, 1998). Thus, sharing resources, firms may complement each other, allowing them to superior performance, since they make possible better market opportunities in relation to those that are not part of the same relationship (Molina-Morales, 2001).

After reviewing the literature, Table 2 summarizes the sources of relational rents discussed above, which represents the conceptual framework adopted in the empirical research, as we explain in the following section.

However, as commented before, to preserve the relational rents, Dyer & Singh (1998) recognize the causal ambiguity and time compression, both from RBV. The first is related to the trust level between firms and the second is the fact that trust and absorptive capacity cannot be rapidly developed or acquired. Besides, the authors claim that the relational rents can be preserved through interorganizational asset interconnectedness, partner scarcity (rarity), resource indivisibility or a socially complex, and therefore difficult to imitate, institutional environment.

Notwithstanding, trust is an important attribute to reach relational rents (Anbanandam et al., 2011; Day et al., 2013; Liao, 2010; Lublinski, 2003; Matopoulos et al., 2007; Niu, 2010; Zhang & Li, 2008). Day et al. (2013) claim that trust is essential to develop relational capital because it can define how partners will perform as well as how they will treat each other. Nonetheless, to develop high levels of trust as well as strong relational embeddedness is rare and difficult to reach (Day et al., 2013).

Table 2. Conceptual framework.

Relational rents	Categories	Subcategories	Authors
Investments in specific assets	Joint investments	Created resources through relationships - asset specificity of the relationship	Williamson (1985), Gulati (1998), Lavie (2006), Dyer & Hatch (2006), Wong & Karia (2010), Lin & Wu (2014), Dyer & Singh (1998)
	Reduction of costs due to geographical proximity	- Geographical concentration - Access to systemic resources - Restricted resources	Porter (1990), Sanchez & Heene (1996), Lawson (1999), Molina-Morales (2001), Vasconcellos et al. (2005)
	Specialized relationships	Asset specificity and operational improvements	Williamson (1985)
	Risks and costs sharing	Trust	Kogut (1988), Matopoulos et al. (2007), Zhang & Li (2008), Anbanandam et al. (2011), Niu (2010), Liao (2010), Day et al. (2013)
Knowledge sharing routines	Incentive to exchange resources	Tangible or intangible resources - asset specificity of the relationship	Williamson (1985), Dyer & Singh (1998), Gulati (1998), Dyer & Hatch (2006), Lavie (2006), Wong & Karia (2010), Lin & Wu (2014)
	Resource sharing routines	- Incentives for resource sharing - Partner absorptive capacity - Incentives to encourage transparency in the relationship	Cohen & Levinthal (1990), Dyer & Singh (1998)
Complementary resource endowments	Distinct resources from alliance partners	- Ability to identify complementary resources - Access to the benefits of complementary strategic resources - Learning process from knowledge and information sharing - Cooperation for joint projects - Sharing employee experiences	Dyer & Singh (1998), Molina-Morales, (2001), Zhang & Li (2008), Hervás-Oliver & Albors-Garrigós (2009), Liao (2010), Fuensanta et al. (2015)
Effective governance	Agreements with third parties	Formal contracts	Dyer & Singh (1998), Williamson (1985), Lavie (2006)
	Formal and informal agreements, mediated by the members of the relationships.	- Trust - Reputation - Relational governance structures - Regulatory mechanism	Kogut (1988), Lavie (2006), Matopoulos et al.(2007), Zhang & Li (2008), Anbanandam et al. (2011), Niu (2010), Liao (2010), Day et al. (2013)

Source: Authors.

Besides trust, other attributes are important to develop competitive advantage in inter-firm relationships. Some examples are facilitated access to complementary public assets, services or goods, informal and institutionalized cooperation, government entities (Hervás-Oliver & Albors-Garrigós, 2007; Santos et al., 2004), social capital (Hervas-Oliver et al., 2015) social status (Vasconcellos et al., 2005) and formal and informal ties (Dyer & Singh, 1998; Zhang & Li, 2008).

3. Research methodology

In order to answer the research questions, “how could firms operating in industrial clusters reach relational rents? What interorganizational resources could influence the development of these rents?” this paper required the development of in-depth qualitative research. We choose the multiple case study method with the aim of developing an understanding of the potential to generate relational rents in the relationship between firms operating in a cluster (Voss et al., 2002; Yin, 2003). We developed an exploratory investigation to provide insights that could inform propositions for further theory development and more effective practice (Voss et al., 2002; Yin, 2003). We select three case studies on which to conduct the analysis. The criteria used to select the cases was based on the identification of a previous relationship between them. Table 3 summarizes some key data of the three case studies.

Based on the conceptual framework (Table 2) we developed a case study protocol, where data collection instruments (semi-structured interviews, direct observations, firm’s documents, officials documents, and web resources), procedures and general rules for carrying out the case studies were formalized (Yin, 2003). The interviews were conducted with middle managers considering the sources of relational rents presented in Table 2. Thus, the questions were related to the interorganizational relationships between partners and the sources of relational rents

Table 3. Summary information of the firms.

CHARACTERISTICS	FIRMS		
	A	B	C
Plant history	1976	1987	1997
Employees	270	2,000	682
Products	Sandals and components for footwear.	Sports shoes and safety boots.	Sports shoes.
Main materials used in the manufacturing process	Rubber and polymer.	Rubber, synthetic, canvas, laminate, fabric, foam, polyester, leather, metals, etc.	Laminate, rubber and other components for the internal fabrication of the soles.
Market	Especially the South, Southeast and Northeast regions of Brazil.		Especially the Southeast, North and Northeast regions of Brazil.
Production	Sandals: between 5,000 and 8,000 pairs per day; Components: about 16,000 pairs per day (insoles), 3,000 kg per month (Ethylene Vinyl Acetate plates) and 60,000 units per month (dampers).	30,000 pairs per day (between shoes and safety boots)	6,000 pairs per day
Exportation	Sandals: 15% to 20%, especially for China and Saudi Arabia.	5% to 10% for Japan, Argentina and some countries in Europe and the United States.	5% is destined for export, especially for Argentina.

Source: Authors.

The researchers conducted, recorded and transcribed the interviews, ranged from 90 to 140 min. each one. After the transcription, a summary of the results was prepared and presented to the managers to verify the information collected.

Data analysis involved two steps: within case and cross case as suggested by Yin (2003) for multiple case study. Thus, data were analyzed through content analysis, using ATLAS.ti software (version 6.0), and information was organized through the categories presented in Table 2.

Content analysis recognizes the importance of language, it is replicable and applicable, it is analytically flexible and, when properly conducted, it is a methodology that can be checked for its accuracy, reliability, and validity (Duriáu et al., 2007). In this research, some indicators were adopted (Bardin, 1977): (i) the information was organized; (ii) the data were coded and categorized, considering the categories showed in Table 2; and, (iii) inferences were made based on the interpretation of the information and the literature consulted.

4. Results

4.1. Firm A

Firm A made investments in a building to accommodate the partner's equipment (specific assets in vertical relations in the supply chain). Due to geographic proximity, the Firm reduced communication errors, improved the speed of response to the market, reduced product defects and developed a rapid product development cycle, factors associated with the specificity of human assets and site-specific. Firm A has a significant partner (Firm B), and through geographic proximity, they exchange technical materials, equipment, physical space, production and market information.

It is apparent that Firm A has costs reduction due to the relation with firms geographically closed (site specificity), improvements associated with the sharing of human resources (human assets specificity), indicating that, although incipient, there are investments in relationship assets.

Geographic proximity facilitates access to systemic resources, such as the flow of tourists (the tourism activity exert positive influences increased production and sales of enterprises), related and supporting industries, access infrastructures and low cost of human resources. Restricted resources are also benefited by geographic proximity, such as government incentives for the footwear cluster.

Firm A shares resources informally, depending on the necessity; there is transparency in the relationships between partners. Due to a healthy relationship, Firm A acquired a kind of knowledge with another firm from the cluster allowing them to develop knowledge associated with new technology. Through this technology, it was possible to create processes, modify product mix and produce sandals as well as components.

Notwithstanding, Firm A could absorb information and knowledge, employing them in their processes and products, indicating the importance of the absorptive capacity. Through events, Firm A share information that is useful for the development of new projects in the cluster. For example, in a joint project with Firm C, Firm A developed a new and valuable resource (printing machine), which is being exploited to increase the potential of relational rents. This machine was developed jointly with its partner to assist the Firm considering the company specificities.

Through resource sharing Firm A has been added value to its products, acting as a complement in the resource endowments (especially knowledge and information) that are specific to the partnerships. Thus, trust among cluster-based firms enhances collaboration and can be considered as a strategic resource, since it allows exploring opportunities. The partnership is rare because it is difficult to obtain it and does not occur frequently; it is difficult to be copied or replaced by firms out of the cluster, having in that case, social complexity and causal ambiguity.

Firm A makes a few informal contracts, especially in horizontal relations. In this case, sharing resources and official information between firms (especially with firm B through managers) occurs informally, based on reputation and trust (relational mechanisms). Thus, Firm A is reducing its costs due to the inexistence of bureaucratic processes that are inherent in formal contracts. On the other hand, legal contracts are associated with confidentiality agreements, official information and joint projects with customers and suppliers. Table 4 presents the main findings from the conceptual framework for Firm A.

Table 4. Findings from the conceptual framework – Firm A.

Relational rents	Categories	Firm A
Investments in specific assets	Joint investments	Investments in a building to accommodate the partner's equipment. Joint project with Firm C to develop a printing machine.
	Reduction of costs due to geographical proximity	Due region specificity, Firm A is: (i) saving costs from relations with firms geographically closed; (ii) accessing systemic and restricted resources.
	Specialized relationships	Human assets and site-specific, influencing in the operational improvements
	Risks and costs sharing	-----
Knowledge sharing routines	Incentive to exchange resources	Shared information through events that is useful for the development of new projects.
	Resource sharing routines	Absorptive capacity from knowledge and information sharing, employing them in their processes and products.
Complementary resource endowments	Distinct resources from alliance partners	It added value to its products, acting as a complement in the resource endowments (especially knowledge and information) that are specific to the partnerships.
	Agreements with third parties	-----
Effective governance	Formal and informal agreements, mediated by the members of the relationships.	- Legal contracts are associated with confidentiality agreements, official information and joint projects with customers and suppliers. - Few informal contracts, especially in horizontal relations. Presence of trust.

Source: Authors.

4.2. Firm B

Firm B made a joint investment in specific equipment with other Firm from the cluster, providing a reduction of risks costs, characterizing the specificity of physical assets. Above that, they usually exchange materials used in the manufacturing process with other firms in the same cluster, as well as equipment, and machine components. However, there is none incentive or frequency determined for this, only if it is necessary in an informal way. The relationship between other clustered firms is frequently and informally (through managers and employees) allowing and accumulating a stock of knowledge that makes possible to reduce communication errors, failures and improve market response.

The site specificity is also present due to the proximity to Firm B and its suppliers. Consequently, there is better coordination of the value chain and agility in the timely delivery. Site specificity has been allowing access to systemic resources (knowledge from universities, infrastructure, and the skilled workforce at low cost); restricted resources, such as the financial incentives, which are given to firms from State, and guarantee a differential regarding profitability and competitiveness.

Through events, Firm B shares knowledge, knowing new equipment and innovations allowing the development of changes in the R&D department. Although informal, sharing routines are common between Firm B and its

competitors. This process occurs through interpersonal relationships between managers who know what kind of knowledge should be sought, assimilated and used to bring benefits. Thus, allowing some degree of absorptive capacity in Firm B.

The inter-firm relationship is transparent and stimulates the learning, either through interaction or articulation or also by the observation of what has been a success in the cluster. For example, recently Firm B acquired a machining center through a partnership with some firms in the cluster. By observing what has been done in the firms, Firm B was able to assimilate the knowledge and use it in its processes, through a learning process.

Knowledge and information sharing bring benefits to Firm B, acting as unique resources that collectively generate higher rents than the sum of those obtained from individual endowments of each partner. This indicates the potential for the generation of relational rents, since Firm B regularly exchanges its employees between its partners and vice versa, facilitating the communication process. Thus, the knowledge and experience exchanged between them are considered rare resources and difficult to imitate. Tangible resources (raw materials, parts, and equipment) which are also shared generate benefits for Firm B. Although they are not strategic resources, the relationship with other clustered firms falls within the criteria of the VRIO model.

Safeguards are common in the formal contracts to preserve from opportunistic behavior mainly in the chain's vertical relations. Informal contracts (based on reputation and trust) are rare but exists in Firm B' horizontals relationships. Nonetheless, there are few opportunistic behaviors. When it happens, Firm B breaks the relationship influencing the trust and the disloyal firm reputation. Most exchanges (especially information) with clustered firms occur through the manager's interpersonal relationships. Considering the information presented, Table 5 synthetizes the findings from Firm B regarding the conceptual framework.

Table 5. Findings from the conceptual framework – Firm B.

Relational rents	Categories	Firm B
Investments in specific assets	Joint investments	Joint investment in specific equipment with other Firm from the cluster.
	Reduction of costs due to geographical proximity	Site specificity is also present due to the proximity, allowing Firm B to access systemic and restricted resources.
	Specialized relationships	Physical assets, providing a reduction of risks and costs.
	Risks and costs sharing	A reduction of risks costs, from the investment on a specificity of physical assets.
Knowledge sharing routines	Incentive to exchange resources	The inter-firm relationship stimulates the learning, either through interaction or articulation or also by the observation of what has been a success in the cluster.
	Resource sharing routines	Through events, Firm B shares knowledge, knowing new equipment and innovations allowing the development of changes in the R&D department. Informally, sharing routines are common between Firm B and its competitors. Absorptive capacity (from knowledge acquired from partners in the cluster).
Complementary resource endowments	Distinct resources from alliance partners	Firm B regularly exchanges its employees between its partners and vice versa, facilitating the communication process. Thus, the knowledge and experience exchanged between them are considered rare resources and difficult to imitate. Shared tangible resources also generate benefits for Firm B.
Effective governance	Agreements with third parties	-----
	Formal and informal agreements, mediated by the members of the relationships.	Safeguards are common in the formal contracts (chain's vertical relations. Informal contracts rare (horizontals relationships).

Source: Authors.

4.3. Firm C

Firm C made a joint investment with Firm A, generating some benefits from region specificity, such as physical space for the partner, transportation cost savings due to geographic proximity, and inventory reduction. As in Firms A and B, in Firm C, site proximity (region specificity) helps the Firm C accessing systemic resources, such as infrastructure (proximity of highways and ports) and low labor cost; and, restricted resources such as government incentives.

Through the partnership established with Firm A, the site specificity and trust between them are enabling Firm C to improve product quality, reducing communication errors and defects in products. These aspects are associated with the idea of human specificity assets. Nonetheless, the investments in these assets do not occur intentionally.

Although informal, knowledge and information is sharing through interpersonal relations by managers, with no rule or frequency determined. Firm C participates and makes events, which facilitate the interaction

between cluster-based firms. Occasionally Firm C has no transparency in the relations, even in the information exchanged informally. Nonetheless, Firm C can absorb knowledge since it can identify materials used by other firms that also bring differential. This Firm adopts training techniques that were absorbed by a partner, due to a prior knowledge base. This fact works as an example of acquired knowledge from other clustered firms.

The printing machine is an example of a developed resource from a relationship with Firm A helping Firm C reducing costs and increasing sales. Firm C exploited the potential of this resource due to its internal structure and knowledge and information sharing with Firm A. Jointly; both created the new equipment. Nonetheless, it is not considered rare, although the trust between the Firms is a resource that provides operational performance benefits. In this way, trust is a strategic resource because it is embedded within a complex social network and was developed over time. Thus, a learning process started in this relationship. For example, Firm C has a training department created by the partnership with Firm A. Besides, through the joint investment Firm C stopped an outsourcing process, reducing costs, especially those related to transportation; improving the flow of information and maximizing the capacity to absorb information and knowledge.

In the vertical and horizontal relationships, Firm C uses formal contracts. In the case of opportunistic behavior, there is the repair of the damage or breakdown of the relationship. Interpersonal relationships with managers are based on trust, but no partnerships are closed without formal contracts. After presenting the information regarding Firm C, Table 6 shows the main results.

Table 6. Findings from the conceptual framework – Firm C.

Relational rents	Categories	Firm C
Investments in specific assets	Joint investments	Joint investment with Firm (physical space and printing machine).
	Reduction of costs due to geographical proximity	Due region specificity, Firm C is (i) saving costs from transportation and inventory; (ii) accessing systemic and restricted resources.
	Specialized relationships	Site proximity (region specificity) Human specificity assets, although not intentionally.
Knowledge sharing routines	Risks and costs sharing	Site specificity and trust between partners are enabling Firm C to improve product quality, reducing communication errors and defects in products.
	Incentive to exchange resources	Knowledge and information is sharing through interpersonal relations.
Complementary resource endowments	Resource sharing routines	Firm C developed absorptive capacity, since it identified materials used by other firms that also bring differential. This Firm adopts training techniques that were absorbed by a partner.
	Distinct resources from alliance partners	Cooperation for joint projects (printing machine, training department created by the partnership with Firm A).
Effective governance	Agreements with third parties	-----
	Formal and informal agreements, mediated by the members of the relationships.	Formal contracts with horizontal relationships.

Source: Authors.

5. Discussion

Table 7 shows the primary sources of relational rents identified in the research. The adoption of mechanisms that help to gain relational rents can help firms (competitors, suppliers or customers) in the entrance in new markets, as well as developing new products.

These mechanisms can provide synergistic benefits, for example, collective learning, that did not occur if they did not adopt an integrated partnership between members. Dyer & Singh (1998) and Gulati (1998) argue that relational strategies can be considered structures that generate results that are sustainable over time, as evidenced by empirical evidence. In the remainder of the paper, a set of research propositions derived from the case data is presented to guide future research and practitioners.

5.1. Investments in specific assets

As shown in Table 7, all firms had been making investments in specific relationship assets (physical specificity). For example, Firm A did an investment in a building in order to accommodate the partner's equipment, and in printing machine; Firm B made a joint investment in specific equipment with other Firm from the cluster; Firm C also made investments in this type of asset (such as physical space for the partner and in a printing machine). These investments were developed based on trust and geographic proximity, which facilitated the

Table 7. Sources of relational rents from the empirical evidence.

SOURCES OF RELATIONAL RENTS			
	FIRM A	FIRM B	FIRM C
Investments in specific assets	<ul style="list-style-type: none"> - Site specificity. - Specificity of human assets. - Physical resources sharing (physical space provided to partner firms). - The existence of particular resources of the relationship (printing machine). - Site specificity allows access to systemic and restricted resources. 	<ul style="list-style-type: none"> - Site specificity. - Specificity of human assets. - Rare investments in the specificity of physical resources. - Specificity of the region allows access to systemic and restricted resources. 	<ul style="list-style-type: none"> - Site specificity. - Specificity of human assets. - Physical resources sharing (physical space provided to partner firms). - The existence of particular resources of the relationship (printing machine). - Specificity of the region allows access to systemic and restricted resources.
Knowledge sharing routines	<ul style="list-style-type: none"> - Knowledge and information sharing. - Absorptive capacity. 		
Complementary resource endowments	<ul style="list-style-type: none"> - Information and knowledge resources that are shared. - Cooperation for joint projects. - Strategic resources. 	<ul style="list-style-type: none"> - Information and knowledge resources that are shared. - Access to the benefits of complementary strategic resources. 	<ul style="list-style-type: none"> - Information and knowledge resources that are shared. - Cooperation for joint projects. - Access to the benefits of complementary strategic resources.
Effective governance	<ul style="list-style-type: none"> - The predominance of informal contracts based on trust. 	<ul style="list-style-type: none"> - Most contracts are formal, legally established. 	<ul style="list-style-type: none"> - Relationships exclusively through formal contracts.

Source: Authors.

communication process between them, leading to the development of joint projects allowing firms to reduce their costs improving their operational efficiency, reducing competitive pressures (Fuensanta et al., 2015; Liao, 2010). Li & Geng (2012) stated that owing to their embeddedness in a cluster, firms build relationships and develop mutual trust on a business and personal level. Hence, we propose:

Proposition 1a: *Trust and geographic proximity contribute to investments in particular resources of the relationship between cluster-based firms, increasing the specificity of physical assets and the potential to generate relational rents.*

Geographic proximity facilitates rapid exchange of information and knowledge between firms, socio-cultural structures, and institutions, promoting collective learning and permanent innovation, advantages not available for non-clustered firms. Cluster-based firms can generate mechanisms based on internal flows of information and knowledge (Molina-Morales & Exposito-Langa, 2012), which are facilitated by relationships in the personal level (Li & Geng, 2012). The benefits are associated with the site and human specificities, mentioned by Williamson (1985), and are present in the three firms. Empirical evidence shows that there is an exchange of experiences of employees and managers, which leads to improvements associated with cooperation, collaboration, interdependence, and resource sharing between the firms. Hence, we propose:

Proposition 1b: *The geographic proximity is associated with the site and human specificities, increasing the potential to generate relational rents between cluster-based firms.*

The geographic proximity also contributes to sharing physical resources. For example, both Firms A and C have a closed relationship which leads to the development of particular resource of the relationship, that is, the printing machine. This resource is used for both firms, allowing accessing indirect benefits, as new market opportunities (Lavie, 2006; Wu et al., 2010). Although without frequency, Firm B also made exchanges with other companies in the same cluster (for example, materials used in the manufacturing process, machine components, etc.). Therefore, the network helps individual firms mobilize tangible resources (physical, financial and human capital) to boost up their innovation capability and competitive advantage (Wu et al., 2010). As a result, is possible to say that:

Proposition 1c: *The geographic proximity between cluster-based firms helps in the physical resources sharing, increasing the potential to generate relational rents.*

The geographic proximity is also reducing costs due to the possibility of accessing systemic and restricted resources, as verified in all firms (Hervás-Oliver & Albors-Garrigós, 2007; Santos et al., 2004). Systemic resources do not belong to individual firms, but can be accessed by them to promote an impact on the performance of

all (Sanchez & Heene, 1996; Wilk & Fensterseifer, 2003). The empirical evidence shows the most important systemic resources are related to tourism activity through increasing production and sales, supporting industries, low cost of human resources, infrastructure (proximity of highways and ports). Although not belonging to any individual firm, restricted resources are also benefited by geographic proximity, such as incentives from the government, knowledge from universities, infrastructure, and the skilled workforce. These resources can be accessed in a privileged way only by cluster-based firms (Molina-Morales, 2001; Wilk & Fensterseifer, 2003). Hence, it is assumed that:

Proposition 1d: *The geographic proximity between cluster-based firms facilitates access to systemic and restricted resources, increasing the potential to generate relational rents.*

Thus, firms can expand their innovation capability, and local institutions, such as research institutions and academies, influence this. This is instrumental in bringing firms together to cooperate for collective benefit; cluster-specific training and management consultation provided by supporting institutions and service agencies can help firms upgrade capability (Wu et al., 2010).

5.2. Knowledge sharing routines

Empirical evidence shows that, when there are knowledge and information shared between firms through their employees and managers, there is a learning process inside the firms, due to their absorptive capacity. Molina-Morales & Exposito-Langa (2012) stated that individual firms in clusters vary regarding personal absorptive capacity due to their heterogeneous knowledge and information base. However, absorptive capacity allows resources (especially knowledge from human capital) to bring benefits and improvements that are used for business purposes, influencing business competitiveness (Cohen & Levinthal, 1990). In addition, absorptive capacity acts as a mechanism for the preservation of relational incomes (Dyer & Singh, 1998).

Data revealed that knowledge and information sharing routines occurs informally. Knowledge sharing routines between firms allow a superior performance once firms can access better market opportunities concerning those firms that do not interact (Molina-Morales, 2001). Hence, we propose:

Proposition 2: *Informal knowledge and information sharing routines enable cluster-based firms to develop absorptive capacity and increase the potential to generate and maintenance of relational rents.*

5.3. Complementary resource endowments

Combining information and knowledge between firms, contribute positively to the performance of organizations, as observed in Firms A, B, and C. For example, some resources were development just due to the relationship between firms (printing machine), allowing raising the production in a short time, reducing costs and increasing competitiveness. Thus, it is possible to say that the relationship has a certain social complexity, becoming a strategic resource. Another aspect that stands out is the training offered by one company to another. Besides, the exchange of experiences between employees occurs naturally.

In this context, Li & Geng (2012, p. 357) consider that

[...] cluster firms in comparison with non-cluster firms demonstrate significantly higher perceptions of shared resources and that shared resources exclusively available to cluster firms link to better cluster firm performance.

Such resources are rare and difficult to imitate due to causal ambiguity (inter-firm relationships). The organizational structure allows these resources to be absorbed and implemented in processes, techniques, new products or technologies, assuming the character of strategic resources. Hence, we propose:

Proposition 3a: *Accessing the benefits of strategic resources and the experiences sharing between cluster-based firms increase endowment resources by raising the potential to generate relational rents.*

The trust relations and reputation between firms (especially Firms A and C) had a strong influence on the development of joint projects and investments in specific assets. Niu (2010) considers that the success of cluster-based firms may be associated with endogenous factors, such as trust, institutions, the flow of resources and information. Reliability, therefore, is a resource that is difficult to imitate and replace as well as

relationships between firms, and both can be considered as strategic resources (Rungtusanatham et al., 2003). Thus, is possible to state that:

Proposition 3b: *Cooperation to carry out joint projects allows accessing to complementary resources due to the sharing of experiences among employees, increasing the potential to generate relational rents in cluster-based firms.*

5.4. Effective governance

Firms adopt different protection mechanisms. Firm A adopts informal agreements, based on the trust, reputation, and credibility of partners, leading to the adoption of relational governance structures (Liao, 2010). Relational governance structures are considered more efficient by reducing transaction costs through negotiation, contracting, monitoring and adaptation, improving performance, making imitation difficult (Dyer & Singh, 1998). The results are in line with other (Chassagnon, 2014) because strong cooperation between firms is explained by relational mechanisms. Consequently, empirical evidence gives support to say that:

Proposition 4a: *The existence of trust and reputation between cluster-based firms enable the use of relational mechanisms to increase the potential to generate relational rents.*

Firms B and C use formal contracts, but also consider the partner’s trust and reputation, especially in the vertical relations. Formal self-enforcing safeguards are economic hostages created intentionally to control opportunism by aligning the economic incentives (Dyer & Singh, 1998). Thus, both firms increase transaction costs but reduce the possibility of opportunistic behavior. Hence, we propose:

Proposition 4b: *Formal contracts between members of vertical relationships in a cluster are based on trust and reputation, avoiding opportunistic behaviors and increasing the potential to generate relational rents.*

Finally, Chang et al. (2012) and Dyer & Singh (1998) argued that regardless of the governance structure adopted, the principal objective is to reduce transaction costs to stimulate value creation such as asset investment, knowledge sharing or a combination of (strategic) resources (Wu et al., 2010), as observed in the empirical evidence.

Therefore, the protection against opportunistic behaviors contributes to generating relational rents because safeguards increase trust. In turn, trust influences in value creation initiatives such as resource sharing. The empirical evidence presents reasons for that: the interdependence previously established in contracts (especially with suppliers and customers) and interpersonal relationships between managers even though they are competitors. In this case, human resources and their relationships are critical to the creation and dissemination of the knowledge-based resources. Figure 1 shows a framework representing the research propositions considering the RV.

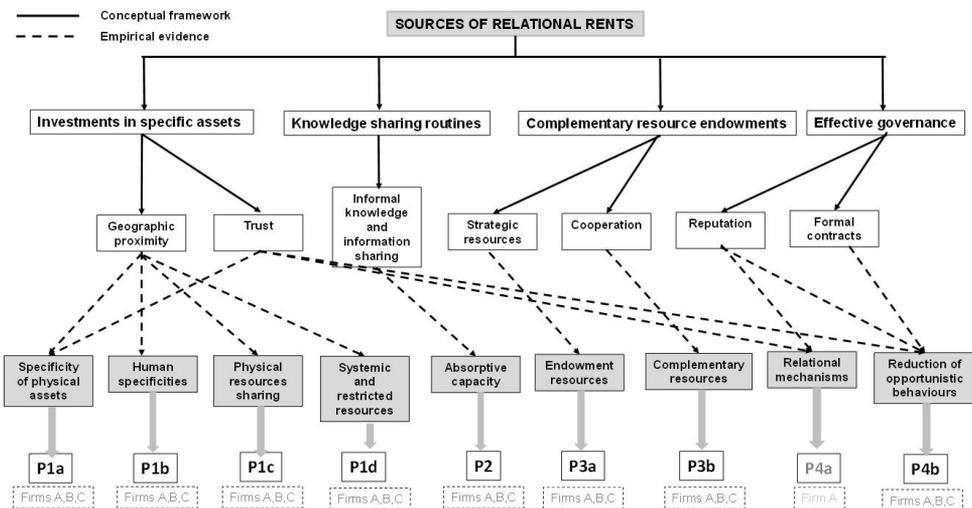


Figure 1. Framework of research propositions. Source: Authors.

6. Conclusion, limitations and scope for future research

Based on the findings, it is possible to reach certain conclusions, limitations and propose directions for future research. First, relational rents are possible when alliance partners combine, exchange or invest in idiosyncratic assets, knowledge, resources, and capabilities or explore effective governance that reduces transaction costs, even though without any formal agreement.

The relationships are informal with spontaneous interaction and emphasize on mutual responsiveness at the collaboration resulting in advantages. An informal collaboration encourages a sense of group identity and involvement, both contributing to knowledge sharing routines and complementary resource endowments, expanding the relational rents. In addition, there are mechanisms to preserve rents. It is because there is a certain degree of indivisibility of the resources (Dyer & Singh, 1998) since the common resources among the three firms that generate the most benefits are related to knowledge and information sharing that are specific to the relationship, being difficult to be replicated by other firms. The creation and maintenance of relational rents are expressively related to the relational capacity that firms have to form and maintain interaction relationships that are valuable (Lavie, 2006), as observed in the empirical evidence.

As a result, the strategic resources of the footwear cluster have their own exclusive and idiosyncratic characteristics that should be valued. Associated with the tourism potential, low cost of human resources, the proximity of the capital and the excellent highway infrastructure (systemic resources) are unique conditions for sustained competitiveness. Considering that these resources exert influence in the in specific assets, such as investments in tangible resources, is possible to say that they sustained the relational rents as well.

Significant contributions are the research propositions developed through empirical evidence. We observed that there are sources of relational rents that can be preserved over time. The geographic proximity is a strong influence in diverse sources of rents (site specificity, physical and human assets, resources sharing, access to systemic and restricted resources – Figure 1). Business trust and reputation also have considerable influence on the development and maintenance of relational rents, especially in knowledge sharing routines, complementary resource endowments, investment in specific assets, and formal and informal governance. Besides that, absorptive capacity is a preservation mechanism, since it allows firms to understand and absorb knowledge and information that lies beyond their borders and, together with the firm's knowledge, can be used to improve processes, products and develop innovations. All propositions were based on the three Firms studied, except the proposition P4a, which requires more evidence.

For practitioners, the results indicated that cluster-based firms could share different types of resources bringing competitive benefits. Decision makers should make sure that while internal resources supply internal competitive advantage and when sharing it provides an additional advantage, such as collective learning. Analyzing the potential to generate relational rents can help in the management process, influencing the firm's competitiveness and the cluster as a whole. Knowing systemic and restricted resources can also be a driver of public policies contributing to the strengthening of the cluster.

The main limitation to the generalizability of our results is the case study design. However, case studies allow developing in-depth insights into a phenomenon and its context. Moreover, they can be particularly valuable for studying relatively unexplored topics and for a complex phenomenon. We had access to detailed information about the relationship between cluster-based firms and the opportunity to interview important informants. Thus, further research can verify to what extent our findings can be generalized and should address these limitations to increase understanding of the potential to generate relational rents.

Future studies could also adopt quantitative survey (i) to analyze the relationship between the variables used in this study and the impact on the economic performance; (ii) to analyze firms operating in and outside industrial clusters to compare sources of relational rents. Further research could also use multi-criteria methodologies such as AHP (analytic hierarchy process), ANP (analytical network process) or GTA (graph-theoretic approach) to analyze the influence of variables of relational rent on collaboration and the degree of collaboration between them. Further research can also develop metrics to evaluate the degree of cooperation between cluster-based firms and the impact on the economic results through quantitative methods. Finally, future studies may also assess the degree of maturity of the cluster comparing its relation with the cooperation developed by the firms.

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