

Inter-organizational projects and competitiveness in industrial networks in the textile and clothing industry

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Abstract: Purpose – This paper explores the role of inter-organizational projects, embedded within the firm’s network of relationships, in the building of competitive advantage. Projects play a relevant role in terms of accomplishing strategic objectives and developing strategies and competitive advantage. Projects can be developed in an inter-organizational context within industrial networks. However, due to the complexity of industrial networks, the relevance of inter-organizational projects is difficult to evaluate.

Design/methodology/approach – The research was developed using a case study approach. Four cases were selected, each representing an inter-organizational project. The studied inter-organizational projects from the Portuguese textile and clothing industry were analyzed within the framework of industrial networks, composed of actors, resources and activities.

Findings – By analyzing four inter-organizational projects, this paper explores the role of project networks as a source of competitive advantage by analyzing how the set of actors, resources and activities within each project evolve over time.

Originality/value – The paper describes the main features of the studied project networks (temporary nature; aims; dynamics and complexity of relationships; informality and trust) and how these features are important for competitive advantage.

Keywords: Project networks, inter-organizational, relationships, cooperative behavior, competitiveness, case study

1. Introduction

Industrial firms develop their activity through the accomplishment of operations and projects. Projects are temporary endeavors aimed to accomplish a unique product or service, while operations are ongoing and repetitive. Within the inter-organizational perspective of business markets as networks of firms (Håkansson and Ford, 2002), a project network can be framed as a temporary network (Grabher, 2002a; Ibert, 2004; Sydow and Staber, 2002), which existence is initially set within a determined time frame. This perspective complements and expands the concept of industrial networks, which duration is not predictable, nor it is established in advance.

The integration of inter-organizational projects within the context of the industrial network approach to business markets (Håkansson and Snehota, 1995; Håkansson et al., 2009; Ford et al., 2011) raises several questions, namely: how do project networks impact the competitiveness of the actors involved; which outcomes may result for the actors involved in the inter-organizational projects; what influences the activities developed within the projects networks; and what influences the resources involved within the project networks. In fact, the conceptualization of the inter-organizational facets of projects is a field of project management identified as lacking further research (Sydow and Braun, 2017).

This paper studies the importance of inter-organizational projects in developing a competitive advantage for firms within industrial networks. More specifically, and within the context of industrial networks, the paper contributes to the following research question: how do inter-organizational projects contribute to the development of competitive advantage? For this purpose, we have analyzed how project networks affect and are affected by actors, activities, and resources (Håkansson and Johanson, 1992). Within the scope of this research, four cases were studied. The studied inter-organizational projects are embedded in wider relationship networks, each formed by a set of firms within which the projects were developed. The case studies are composed of firms from the Portuguese textile and clothing industry.

When analyzed within the framework of the activities-resources-actors model, projects imply to develop activities performed by actors using resources. The analysis presented in this paper is based on the network perspective of the firm and the framework of analysis is based on the variables that compose this model of industrial networks.

The actors, responsible for controlling activities and resources, can be individuals, groups of individuals, parts of companies, companies or groups of companies, and there are actors at various organizational levels in the industrial network (Håkansson and Johanson, 1992). When inter-organizational relationships are established, links are formed between the activities, resources, and actors of the entities involved. However, the permeability of organizations to these relationships depends on the degree of the relationship, that is, to what extent each organization is interested in allowing the sharing of activities and resources with the partner concerned.

The next section of the paper presents the literature review, organized around three main topics: project networks, cooperation in projects, and competitive advantage. The following section details the material and methods used, followed by the presentation of the results. The last section presents the discussion and conclusions.

2. Literature review

2.1. Project networks

The existing knowledge on project management is based fundamentally on two issues (Engwall, 2003): (i) how to structure and plan the project activities in order to accomplish previously established objectives; and (ii) how to ensure that the project activities defined are accomplished in agreement with the established plan. This is a popular approach to project management followed for instance by the Project Management Institute (Engwall, 2003; PMI, 2013). Other more specific topics to research projects include their contextual, social and political aspects (Bakker, 2010; Svejvig and Andersen, 2015), value creation in the project lifecycle (Matinheikki et al., 2016), time and temporality in their management (Bakker, 2010; Bakker et al., 2013; Engwall, 2003; Grabher, 2002a), complexity (Sage et al., 2011) and uncertainty (Engwall, 2003; Svejvig and Andersen, 2015), and tasks, talents, and teams (Grabher, 2002b). Projects can be seen as temporary organizations (Bakker, 2010; Ibert, 2004) and, therefore, it is not surprising that some of the major themes in studying organizations are also applied in research projects.

As a temporary endeavor that ends after a given period of time, a project is developed to create a unique product or service being implemented through continuous and repetitive operations over its lifetime (PMI, 2013). However, a project differs from operations in the

way that it has not only an operational dimension but may also pursue strategic aims for the organization or organizations involved in its implementation (PMI, 2013).

A project may involve one or more persons, one or more organizational units, or even one or more organizations, and have a duration of days to even years (PMI, 2013). For the purpose of this paper, we only consider inter-organizational projects, developed by two or more firms in an industrial context.

The industrial marketing and purchasing (IMP) group offer a valid and coherent view to study project networks, that is, projects that directly involve a network of organizations. Håkansson and Johanson (1992) proposed a structural model composed of a basic set of variables, related to each other in the overall structure of inter-organizational networks, namely: actors, activities, and resources. Actors are defined as performing the activities, and/or controlling the resources; when performing the activities, actors use certain resources to change other resources in various ways; finally, resources are the means used by actors when they perform activities. Based on this network perspective, a project network is a temporary network of actors, activities and resources. Actors establish relationships within the project, during a limited period of time, develop joint activities and share resources aiming to achieve some common or shared goals.

According to Sydow and Staber (2002), project networks are inter-organizational structures of coordination of activities and relationships between firms and legally autonomous individuals. These systems are temporary since the activities that compose a certain project are limited in time. However, in spite of their temporal limit, project networks are more than temporary systems, since the relationships developed between actors are not limited to the temporal length in which the projects occur. Hence, when collaborating organizations in a project are in a larger network of longer-term inter-organizational relationships based on reciprocity, it assumes the character of a project network (Sydow and Staber, 2002). This network serves as a connection between the firms that participate in the project, as well as the organizational and institutional environments in which the firms are inserted. These relationships possess a past and a potential future. Projects are not isolated and solitary systems, but open systems in time and space (Engwall, 2003). In this perspective, project networks are therefore dynamic inter-organizational and interpersonal relationships based on the project, that exist beyond a specific project (Manning, 2005; Manning, 2017).

As mentioned by DeFillippi and Sydow (2016), a project can be framed as a single inter-organizational project, or as a series of projects interconnected by inter-organizational

relationships. The research presented in this paper is framed within a specific network of inter-organizational relationships, namely the Portuguese textile and clothing industry, in which organizations collaborate in different inter-organizational projects, but without the perspective of a repetitive basis. As stated by Sydow and Braun (2018), these inter-organizational projects (or IOPs) do not necessarily have a repetitive basis, since these may have neither a past nor a future beyond the present collaboration.

The stability that characterizes a certain project serves as a basis for the development of trust, commitment and reciprocity that on their turn serve as a basis for the coordination of the project (Sydow and Staber, 2002). Project networks are produced and reproduced by actors that influence the structures of the network without controlling them entirely. Project networks, through the action of actors, change through time. Since the organizational and institutional properties of a project network are considered as neither established a priori, nor unchangeable, but, being more or less contested, are vulnerable to change (Sydow e Staber, 2002).

A project network is defined through three characteristics (Hellgren and Stjernberg, 1995): (i) a set of relationships where no isolated actor possesses legitimate authority over the network as a whole; (ii) where the network is open in the way that there are no definite criteria through which the frontiers of the net may be identified and controlled; and (iii) where the network is temporally limited, changing in a dynamic way and (partially) rebuilt from one project to the next. Considering this network perspective of projects, a project is seen as organizational processes between actors with different perspectives in terms of objectives, time orientation and problem resolution, and different and modifiable positions of power in the network.

DeFillippi (2002) frames the project networks within the scope of the “new economy”, opposing the “old economy” that defends well-defined functions and tasks. The “new economy” valorizes self-organized teams, team groupings, firms and industries in communities of firms, and institutions in networks. In contrast to the functional organization, the project-based organization has been referred to as an ideally suited way to manage the increasing complexity of products, rapidly changing markets, dissemination of business knowledge across the various functional areas, focused innovation in customer and the technological and market uncertainty (Hobday, 2000).

2.2. Cooperation in project networks

Projects are developed in a cooperation environment, which throughout several project cycles, originates relationship networks (Grabher, 2002a). Hence projects need to be understood in both their inter-organizational and historical contexts (Bakker et al., 2013; Engwall, 2003).

Considering that a particular project reflects a relationship network composed of direct and indirect relationships, we may distinguish at least two levels of project networks: a level that is associated with developments between projects and actors involved; and another level associated with the development of the project itself, along which new players can emerge and establish relationships of various kinds. The practice associated with project organizations is based on the past experience of the actors, is also affected by the shadow of potential future cooperation (Grabher, 2002a).

The development of an inter-organizational project, involving two or more firms, has the potential of resulting in a greater diversity of interests and perspectives that leads to the necessity of promoting and implementing cooperation within the project (Sariola and Martinsuo, 2015; Bakker et al., 2013; Pinto et al., 1993). To the extent that projects are initiatives planned and undertaken by different stakeholders based on common or shared objectives, it is likely that there is a necessity for effective cooperation between the actors in project networks.

The realization of cooperative relationships between organizations implies an evolution in the inter-relationship of the actors involved, through the processes of initiation, evolution, and dissolution (Ring and Van de Ven, 1994). The adaptations that need to be made by the actors in the business network arise from the necessity to coordinate the individual activities so that they are able to contribute towards the objectives outlined. Therefore, there is a continuous change and adaptation by the entities involved in the cooperation, which is not only a question of the product or processes of manufacture but also of administrative, cultural and strategic aspects. It is the effort expended and the implementation of these adaptations that are responsible for generating and reflecting the commitment of the organizations in the scope of the cooperation relationship (Håkansson and Snehota, 1995).

The degree of complexity associated with a given network of organizations must also take into consideration the potential new relationships that may arise from any of the current

players. This situation forces constant restructurings and adaptations by the various actors (Håkansson and Snehota, 1995), highlighting the importance of two fundamental aspects within the network: the capacity for change and adaptation and the capacity to generate, transmit and convert information within the network.

The development of cooperation relationships, that occurs when two or more actors possess objectives that are mutually dependent, occurs within the scope of project networks as formal cooperation. Cooperation in several projects originates from a deeper understanding between the intervening actors and the response by the coordination, resulting in the sharing of knowledge originated in previous projects. The memory of previous experiences in multifunctional teams may influence the will to cooperate with the members of the team, and the results of the project (Pinto et. al, 1993).

Project networks are responsible for selecting the actors and for the creation of relationships according to the specific characteristics and requirements of the project (Manning, 2005). In implementing cooperation between the actors involved in a project network, trust has a key role for success, as confidence levels are based on team member's own perception, other team members and other stakeholders involved in the project (Herzog, 2001).

Cooperation initiatives are successful when the feeling of solidarity is strongest among the actors involved, (Brett, 1996). However, cooperation initiatives face barriers to its development such as self-interest and opportunism.

Over the past years, there has been a significant increase in the development of computer technologies whose objective is the development of cooperation, primarily aimed at small and medium enterprises (Attaran and Attaran, 2002). With current communication systems based on the Internet, the ability to secure communication between actors is currently a reality independent of time and space. However, despite the new technological solutions that contribute to shortening the perceived distance, geographical proximity remains an enhancer and an important element in the development of project networks (DeFillippi, 2002).

To sum up, the elements of collaboration quality in project networks include (Dietrich et al., 2010; Hoegl and Gemuenden, 2001): communication between collaborative actors; coordination (i.e., shared mutual understanding on goals, activities, and resources); mutual support between actors (i.e., willingness to help each other); aligned efforts (i.e., commonly agreed to priorities); and cohesion between actors.

2.3. Competitive advantage in networks

Competitive advantage is associated with superior performance in a specific business indicator or a set of performance indicators (Eiriz et al., 2010). A firm possesses a competitive advantage when it implements a strategy that can create value that is not simultaneously implemented by any current or potential competitor (Barney, 1991; Barney and Clark, 2007). Porter (1985) considers sustainable competitive advantage as the basis for an above-average performance, distinguishing two kinds of competitive advantage that a firm may possess: low cost or differentiation.

One of the aspects to be considered in competitive advantage relates to its sustainability (Porter, 1985; Barney, 1991). Once established, competitive advantage is subject to erosion through competition. Maintaining a competitive advantage over time, making it sustainable, requires barriers to imitation, such as information and resources. The sustainability of a generic strategy requires the possession of some barriers that hinder the imitation strategy, requiring the firm to continue to invest in order to continually improve its position (Porter, 1985).

Firms increasingly value their inter-organizational cooperation relationships and their relationships as a privileged means of developing a competitive advantage. Despite the recognition of the importance of relationships has evolved significantly, there remain challenges in the development of competitive advantage from these relationships (Eiriz and Wilson, 2006). Relationships have significant importance in influencing the trajectory of the firm, knowledge and information sharing, market access, product development and reaction to change, just to name a few aspects.

Cooperation has been recognized as able to develop a competitive advantage (Dyer and Singh, 1998; Fuller-Love and Esyllt, 2004; Ford and Håkansson, 2006). In an industrial environment of increasing uncertainty and competition, the development of inter-organizational relationships is relevant to the survival and competitiveness of the firm.

The competitive advantage that a firm can derive from its network of relationships is not easily replicable, mainly when resulting from inter-organizational cooperation, as a privileged means to share resources and create synergies between actors. Considering that the complexity of a strategy increases the barriers to imitation (Rivkin, 2000), inter-organizational cooperation and fundamentally strategic cooperation can be a source of competitive

advantage. The competitive advantage that a firm can gain from its network of relationships is difficult to imitate, making it difficult to erosion through competition.

Based on the perspective presented by Dyer and Singh (1998), competition should be seen as occurring not only between actors but between networks of relationships with their actors, activities, and resources. Accordingly, inter-organizational competitive advantage is achieved through the idiosyncrasies of the relationships established within the network. Competitive advantage may be generated by idiosyncratic investments to the extent that these promote efficient inter-organizational and growth performance (Jap, 2001). The furthest the inter-organizational relationship is from the basic relationship of trading and the closest it is to the establishment of effective cooperation relationships between the elements of the project network, the greater is the potential competitive advantage for the firms involved and the higher is the difficulty in imitating the resources and the mechanisms of cooperation established between the firms involved in the inter-organizational network.

The success or failure of a relationship of inter-organizational cooperation is reflected in the perceptions of stakeholders at the level of satisfaction or dissatisfaction towards cooperation. The expected benefits are fundamentally dependent on the expectations of the stakeholders, and evaluating the results is significantly dependent on the time that is necessary to wait for the results to be visible. However, the inter-organizational approach presents risks, among which the following stand out: the risk associated with the uncertainty of the result of cooperation, possible loss of opportunities to explore alternatives, less flexibility regarding technological changes in the environment, and problems related to opportunism (Jap, 2001).

3. Material and methods

The research developed seeks to answer fundamentally "how" and "why" questions, focusing on current and past events that are at their origin. The questions of this type find answers using case study methodologies (Yin, 2003). A case study is a method of empirical research that investigates a contemporary phenomenon in its real context, fundamentally when the boundaries between the phenomenon and the context are not clearly evident.

In order to evaluate different management options and their impact on the competitive capacity of organizations, the scope of the study leads to consider the analysis of multiple case studies, allowing to increase the scope and robustness of the study (Yin, 2003). The selection of the four studied cases, each corresponding to a specific inter-organizational

project, was carried out in two phases. In the first phase, the areas of activity within which the case studies were to be developed were chosen. The selection of the areas of activity followed the following criteria: representativeness, diversity, and perceived relevance. The selection of firms was based on the collection of documents about the textile and clothing industry, aiming to identify potentially interesting firms for the study.

After this selection, the contacts were initiated with the aim of triggering the data collection. There was inevitably a selection that was dependent on the positive response and availability of the firms contacted. Data were collected to construct and describe the network of inter-organizational relationships for each project. Through subsequent contacts, which also resulted in a further screening, since not all of them provided access to data, the networks of relationships that determined the four case studies were constructed.

In the context of case studies, several sources can be identified for data collection: firms' documentation, semi-structured interviews, direct observation, and participant observation. However, semi-structured interviews and documents were the main technique used for our data collection.

Through the development of case studies, the content of the work developed benefits from the access that this methodology grants in the direct observation of events access to the actors directly related to the events (through the development and realization of interviews), as well as access to other evidence such as documentary evidence (Yin, 2003). Within this methodology, it is also necessary to consider the use of case studies already developed on the subject under study, as well as documented case studies, as long as they are able to highlight the management options that are the basis of the company strategies. Triangulation that can be accomplished through multiple data collection methods provides a stronger foundation for constructs and propositions (Eisenhardt, 1989).

The choice of semi-structured interviews with key players in the various case studies is based on the fact that it allows some freedom in data collection while maintaining clear guidance on the most relevant information to collect. Semi-structured interviews are a qualitative data collection technique, developed to collect information about perspectives, opinions, ideas, and experiences (Arksey and Knight, 1999). The use of open-ended questions is an option taken into consideration with the type of interview in question. Moreover, the use of open-ended questions encourages communication. Therefore, in the scope of the interviews conducted, the interviewees' responses were evaluated and searched, with the aim of finding a better elaboration on the subject, clarification, specific examples, among others. Full and in-

depth answers are very important, since data that are insufficiently substantial, precise or clear, cannot constitute adequate evidence from which conclusions can be drawn at the stage of the research process (Arksey And Knight, 1999).

Case selection is inherent in research questions, and there are inevitably issues that narrow the area in which case studies are developed (Marshall and Rossman, 1995). There are at the outset two obvious constraints: the first linked to the phenomenon under study and the second linked to the sector of activity in which the phenomenon is studied. According to Eisenhardt (1989), the selection of the appropriate population controls changes in others and helps to define the limits for the generalization of results. The choice of the cases considered was based on theoretical assumptions, maintaining the objective of replicating or enriching the development of theoretical knowledge related to the phenomenon under study.

There are several aspects to consider in the selection of the case studies, and ideally, the sampling should consider the following aspects (Marshall and Rossman, 1995): (i) possibility and access; (ii) potential contribution to research and to respond to the criteria/elements under analysis; (iii) the possibility of guaranteeing a new access or continuity of presence; (iv) ensure the quality of the data and the credibility of the study by avoiding poor sampling decisions. Marshall and Rossman (1995) also point out that, insofar as there are limitations on the size of the sample to be considered, it should be as varied as possible for the phenomenon, condition or persons under study. In a qualitative study, sampling is controlled and selected according to the subject of the investigation, so case selection must follow a logic of utility and relevance for the study (Patton, 1990).

There is considerable scope for sample size in case studies, or better still: there are no defined rules on the size of qualitative samples (Patton, 1990), so the criteria used depends on other aspects such as research questions, credibility, and feasibility, considering the availability of time and resources. Therefore, the size of the sample turned out to be flexible and emergent, so the size decision was made on the basis of the data collected and the potential interest of the various branches of the networks.

The research had two phases of interviews, each with a specific interview script. This option allowed for data validation, with the first set of interviews being mainly exploratory, while the second set was more focused on the objectives of the research. The script of the first phase of interviews was tested with an experimental interview, which conducted an evaluation of the script and the data collected. The interviews of the second phase were carried out based on the following criteria: confirmation of previously collected data; an answer to doubts that

emerged from the data analysis; and follow-up of pending questions. The interviews covered the majority or the totality of the actors involved in the inter-organizational projects (the only exception is associated with two foreign actors in Project 1).

During the first set of interviews, besides the questions relating to the characterization of the company's activities, organization and inter-organizational relationships (characterization, evolution, and management), the questions focused on the identification and characterization of the activities developed by the firm within the inter-organizational projects. Also, several questions focused on the relationship between competitive advantage and inter-organizational relationships, namely: "How can the contribution of the relationships network to the competitive capacity of the firm be fostered?" and "Considering the network of relationships of the firm and the environment in which the firm is framed, what measures are or could be developed to foster the competitive capacity of the company?".

The second set of interviews focused on the evolution of the firm in regards to the previous set (in terms of strategic options, markets, market approach, business environment, and basic issues like the evolution on the number of employees, production volume and turnover), as well as specifically on the inter-organizational projects developed, namely in terms of identification of the projects developed, characterization of the actors involved, identification of the results obtained, as well as new projects (regarding the initial set of interviews) and future projects planned. **Table 1** summarizes the interviews completed, as well as the respective duration.

Table 1: Summary of interviews

Project	No. of actors	No. of interviewed actors	No. of interviews			Total time in minutes	Average time per interview	Minimum time per interview	Maximum time per interview
			1st	2nd	Total				
1	4	2	2	1	3	153m	51m	39m	59m
			Interviewed actors: P1.A and P1.B						
2	3	2	2	0	2	87m	44m	24m	60m
			Interviewed actors: P2.A and P2.B						
3	3	3	3	1	4	212m	53m	30m	93m
			Interviewed actors: P3.A, P3.B and P3.C						
4	2	2	2	2	4	216m	54m	46m	71m
			Interviewed actors: P4.A and P4.B						

Source: authors

The interviews were recorded in digital format, transcribed using a text processing software and inputted into the NVivo software. In the transcript of interviews, some expressions such as abbreviations, verbal tics, pauses, and repetitions were eliminated, an option that is justified when the scientific objective under study is the ideas, logic, opinions, and interpretations of the interviewee (Arksey and Knight, 1999).

Documents in digital format or transcribed text from documents in paper format were also edited in the text editing software and inputted to the data analysis software. In cases where ambiguity or doubts were identified regarding the data collected in the interviews or in cases where issues of interest for future development were identified, new contacts were made with the interviewee in order to clarify the issue. These clarification contacts were preferably made by e-mail and, if necessary, by telephone. For analyzing the data, attributes were defined to characterize and aggregate the data accordingly. These attributes were divided into categories and subcategories of analysis, as presented in **Table 2**.

Table 2: Categories and subcategories of analysis

Categories of analysis (“node”)	Subcategories (“free node”)
C1 - Actors, activities and resources	C1.1 - Actors
	C1.2 - Activities
	C1.3 - Resources
C2 - Cooperation capacity	C2.1 - Cooperation initiatives
	C2.2 - Barriers
	C2.3 - Incentives
	C2.4 - Cooperation results
	C2.5 - Evolution
C3 - Strategic cooperation	C3.1 - Areas
	C3.2 - Strategic cooperation initiatives
	C3.3 - Results of strategic cooperation
C4 - Competitive capacity	C4.1 - Promoting factors
	C4.2 - Inhibiting factors
	C4.3 - Results

Source: authors

The research considered two units of analysis, namely: the firm, and the inter-organizational project. Based on these units of analysis, for each firm involved in the studied projects, an individual NVivo file was created to analyze data. The individual files were then

gathered in one file for each project, allowing for further data analysis and drawing of conclusions.

The interviews were not only focused on the projects studied in this article, but included a broader set of questions involving a characterization of the firm – including activities, products, markets –, description of the relationship network, and an analysis of the cooperation initiatives in which the firm was involved – including results, benefits, promoting and detracting factors. The relationship network, in which the projects were identified, was gradually built based on the data gathered and the interviews conducted. Within the relationship network, several projects were identified, four of which were selected as described in the following section.

4. Results

As it was mentioned before, the four inter-organizational projects studied in this article are composed of networks of firms, organized with a temporal limit and with a specific objective. Although the project network is temporary, the relationships within the actors involved possess a past and a future that expands before and after the project. Although this relational past and future do not assume the form of a project, it plays a relevant role in selecting the actors involved in the inter-organizational project.

The inter-organizational projects were selected within the Portuguese textile and clothing industry. These projects reflect different levels of interaction, complexity, and objectives, as considered in the following descriptions. These differences resulted in different levels of interaction regarding the three dimensions of the network model, namely: actors, resources and activities. The analysis is reflected in the impact of the project on the actors involved, considering the previously described dimensions of the network model.

Project 1: product development of new yarn.

This project was developed with the objective of developing a new yarn composed by a mix of the fibers Drirelease and SeaCell Active. The yarn was developed by the firm P1.A (project 1, firm A) in cooperation with the suppliers of the fibers and firm P1.B, responsible for the application of the yarn in knitting. The firm P1.B promoted the application of the yarn together with firm P1.A in the textile exhibition Expofil 2007. In this project, there is a cooperation relationship between the two Portuguese actors involved. This relationship derives from prior knowledge and co-participation in other projects.

Project 2: joint negotiation for a specific order of a knitted jersey.

This project was developed with the objective of responding to the product requirements of a specific customer which ordered 20 metric tons of a knitted jersey with Lycra (trademark from Invista). These requirements involved a set of specifications in terms of yarn properties, knitting and finishing processes. In order to do so, it implied the negotiation of prices, costs, and conditions for the realization of this specific order. In this project, there is an aggregation of resources and a common effort developed to respond to a very specific need: to meet the requirements of a specific order from a client. The inter-organizational dimension arises from the scarcity of resources and solutions for outsourcing enough material for the single firm to meet the requirements proposed. Therefore, this situation resulted in the negotiation and sharing of information and resources among different firms, namely: P2.A (textile trading), P2.B (dyeing and finishing) and a third firm (knitting). As a result of this effort, it was possible to comply with the specific requirements of the client. The actors involved in the project were joined together by the necessity of complying with a customer requirement through joint negotiation and derived from previous business relationships.

Project 3: development of a new collection of textiles and decorative bathware.

The objective of this project was to develop a coordinated assortment of products of textile and decorative bathware for a specific season, including: bathroom carpets, shower curtains, bath towels, and bathroom accessories. The project involved the following firms: P3.A, P3.C, and P3.B. The project was implemented under the supervision of P3.A in order to develop a collection of bathroom amenities integrating products from the three firms, from shower curtains and rugs from P3.A, bath towels from P3.C and bathroom accessories in ceramic from P3.B. The actors involved in the project were joined together by a marketing option of supplying a line of coordinated products, and the actor selection involved a process of negotiation, selection and evaluation.

Project 4: development of an antibacterial yarn.

The objective of the project was to integrate antibacterial properties in a new line of mattresses. Starting on a suggestion from the firm P4.A (producer of fabrics for mattresses), the yarn was developed by the firm P4.B, which appealed to the participation of a supplier. The firms developed and tested the yarn, sharing knowledge and experience in order to develop the final product. The firms involved in the project evolved from a client/supplier relationship.

Considering the four inter-organizational projects described in the previous paragraphs, **Table 3** presents the outcomes from each of the projects.

Table 3: Results from the studied projects

Project 1	Project 3
<ul style="list-style-type: none"> • Share of costs between the actors in the project, which implies risk sharing; • Share of the results from the project; • Share of knowledge regarding new products for the market in the future; • Share of knowledge in new product development; • Share of the risks in new product development (this risk is present in the investment necessary and in the trial of new products and materials, and also in withstanding the burden of time to market, from prototyping to market); • Capacity to accumulate further knowledge from other actors in each actor's relationship pool (both upstream and downstream); • Extension of relationships network, both downstream as well as upstream. 	<ul style="list-style-type: none"> • Increased integration of the products offered in the collection, originated from a stronger interaction between the designers of the firms; • The higher degree of communication between the suppliers of the different products offered to the market; • Stronger bonds between the actors in the supply chain; • Ability to offer a full package product line with a specific concept.
Project 2	Project 4
<ul style="list-style-type: none"> • Supply of the product to the customer according to the specified requirements. 	<ul style="list-style-type: none"> • Both actors gained access to new products that can be marketed, although there is a potential risk of increased competitiveness from other customers of the suppliers.

Source: authors

From the results of the projects, it is possible to identify different impact levels in terms of the actors involved in the project. Project 1 stands out as the one with the highest impact in terms of the actors, activities and resources involved. Considering this case, and regarding the impact on actors, it was noticed an increase in relationships and interactions, which resulted from broader market access. As a result of additional knowledge accumulated by firms and new product development, the activities have also been considerably impacted. The same can be said about resources due to knowledge accumulation in terms of manufacturing processes and raw materials.

The impact of Project 2 and Project 4 was mainly on the capacity to respond to a customer requirement. The results of Project 3 had an impact on the actors and the relationships involved since it provided a starting point for the involvement in other projects.

5. Discussion and conclusions

Based on a relationship network, several inter-organizational projects were identified. These projects unfolded at the intra-organizational and inter-organizational levels, being jointly developed with suppliers or with customers and other organizations. It is evident from the case studies that these projects are not, in general, treated as a formal project. However, these projects are recognized as an endeavor limited in time with an initially established objective.

The projects described in this paper occurred during a specific period of time and were the result of previous relationships between the actors, or the result of intermediation by other actors. This interconnectedness within actors reveals the importance of industrial networks in the initiation of inter-organizational project initiatives and in the identification and selection of potential actors to be involved in the project.

Based on the four projects analyzed, it was observed that the resources allocated by the actors to the projects were not initially defined, but were gradually evaluated and revised, adjusting to the objectives and impacting the duration of the project itself. As a standing point, actors are aware of the objectives and often of the extent they are willing to go in the pursuit of such objectives, but the extent of effort in terms of resources allocated is not always clearly defined a priori by the actors involved in the inter-organizational projects. This translates in the sense that the actor's involvement in the projects is gradually and constantly reassessed, and the activities and resources involved are frequently evaluated in regards to the expected potential outcomes of the project. So, there is a certain extent of informality that is often motivated by the necessity of adaptation and a quicker resolution of the issues in hands, thus neglecting a thorough planning activity in the project. This adaptation capacity plays an important role as a contributing factor to the uniqueness of the project outcome, thus contributing to the development of strategies not simultaneously implemented by current or potential competitors.

The multiplication of relationships and interactions in a project is a potentially positive outcome of projects for individual actors. This results from the increase in interactions and relationships that are associated to the actors involved in the project, but also from the potential interactions and relationships that surpass the frontiers of the projects and may result in additional resources for the actors, and also from the sharing of knowledge between the actors involved. If rich interactions are created within a project, then the results may be

potentially positive for the actors involved. However, the lack of formalization may result in a lesser systematization of the knowledge generated, and a lesser degree of documentation of that knowledge (explicit knowledge), which could hinder further research and sharing of knowledge. This richness of interactions and relationships results in a potential capital for the actors, thus allowing the existence of potential opportunities for sustainable differentiation.

Informality is considered by the actors (i.e., Project 1) as a way to accelerate the project outcomes, by limiting the requirements associated with the formalization of the activities on the one hand and eliminating barriers to communication on the other. However, informality may eventually hinder the control process and even the results of the project, due to a potential loss of knowledge. This informality in the handling of projects is, at some level, associated with the need to respond quickly to market demands, but can lead to gaps in the results. It was also found that trust built based on the participation in previous projects was a promoter of informal relationships within the project network. Also, the actors involved in these projects were generally previously acquainted either from previous projects or from previous business relationships, and even personal relationships. However this pattern of informal relationships established through consecutive inter-organizational projects may eventually hinder the control and the knowledge resulting from the project, it is built on trust and long-term relationships, representing an effective barrier to imitation, thus contributing to the sustainability of the competitive advantage.

Although in certain cases it is difficult to assess the impact of the project on the firms' competitiveness, especially in cases where the limits of time or the project's objectives are confused with the current activities of the firm or other projects developed concurrently, actors considered that inter-organizational projects have a significant positive impact by effectively promoting the firms' competitive capacity, even though in some cases not achieving the results originally planned for the project itself.

The projects developed at the inter-organizational level with firms of the supply network (i.e., customers and suppliers) act as bridges between the actors involved. Hence, projects occupy a position parallel to dyadic relationships established between the firm and the customer or the firm and the supplier. Therefore, projects also play a role as an enhancer of interactions between actors. Moreover, projects limit the risks associated with inter-organizational initiatives, to the extent that they are limited in time and scope, they limit the information shared (as well as other resources in general) and limit the dependence generated. Projects may also be an option for firms to counteract the effect of interdependency that

occurs in industrial networks, especially in vertical relationships. By developing relationships with other firms, through project participation, firms may access additional actors and resources. Projects thus allow a base to develop trust and understanding between the actors, serving as a foundation for further inter-organizational cooperation, which serves as a basis for developing a competitive advantage.

In fact, the previous acquaintance of the actors involved in the projects was based on trust and resulted in a promoting factor in what regards to informality in the coordination of the project. In the case of some actors, it is possible to consider the presence of a project network, originated from previous existing relationship networks.

Within the context of inter-organizational projects embedded in industrial networks, trust plays a most relevant role. However, considering that these projects are usually based on relationships within the same industry, the knowledge involved may be easily imitable and transferable, thus limiting the actor's competitiveness. The issue of imitability is particularly relevant when relationships are of an informal nature, since activities that govern the mechanisms of sanctions, control and monitoring implemented in the project, are tendentially nonexistent or less forcefully implemented.

Although projects are limited in time, the outcomes of the project do not have this limitation and may endure and provide a basis for building a competitive advantage. However, for this advantage to be sustainable, it has to be protected. Due to the complexity of the pool of resources and activities involved in inter-organizational projects and the way these are combined, they act as a basis for actors to assure an effective barrier to imitation. However, this idiosyncrasy does not prevent the imitation of the outcomes of the project itself, originating from an additional challenge for the actors involved in the inter-organizational projects.

Interorganizational projects seek to address a specific and not recurrent necessity, which may be based on several and relatively simple objectives, such as: respond to the requirement of a customer to supply a particular and unique product on time or meet a requirement associated with the product supplied, such as a quality problem that arose in the product. However, these projects have the common element of being developed at an inter-organizational level, involving two or more actors, whose resources and activities are necessary to achieve the proposed objectives. This framework provides the ideal setting for actors to share resources, activities and results in a focused and objective way, maximizing the gains according to time constraints that characterize projects and implementing control

activities that serve as a barrier to imitability. Therefore, it is somewhat difficult to understand the scarcity with which projects are used by firms as a way of promoting sustainable competitive advantage through inter-organizational development. Hence, inter-organizational projects add an additional dimension to the development of competitive advantage in industrial networks.

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