

Research and development project of innovative food products from an inter-organizational relationship perspective

A. Hoppe¹, L. Marques Vieira¹, M. Dutra de Barcellos² and G. Rodrigues Oliveira¹

¹UNISINOS, Av. Unisinos 950, São Leopoldo, RS, 93022-000, Brazil

²UFRGS/PPGA/EA, Rua Washington Luis 855/409, Porto Alegre, RS, 90010-460, Brazil; marcia.barcellos@ufrgs.br

OPEN ACCESS - RESEARCH ARTICLE

Abstract

The objective of this research is to analyse the motivations and barriers to develop an innovative food product from the perspective of the two main participants in a development project. The perceptions of a Brazilian food co-operative and a Technological Centre were analysed throughout a case study. The results indicate the existence of a complex dyadic relationship between them and also that the food innovation network is still in its early stages in south of Brazil. The main motivation for the Technological Centre is to contribute to the national development policy. On the other hand, for the company there is the possibility to obtain partial funding for products development. The company is venturing while bringing to the food market an innovative product. Yet, it is clear that these kinds of inter-organizational collaborative efforts can bring benefits to food networks in general.

Keywords: inter-organizational project, motivations and barriers, food networks

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1. Introduction

The constant economic world changes have been modifying issues such as industrial organization, innovation, research and development (R&D). While globalization brings opportunities for industries to access international markets, it also threatens the survival of some sectors in specific countries (Paiva and Vieira, 2010). The integration of global markets and dispersion of production in different countries (Gereffi *et al.*, 2005) has lead companies and their supply chains to adapt to fast and radical changes in the market. An example is the food industry, which is undergoing a restructuring due to constant market changes, and beginning to seek cooperation with other companies and actors rather than just compete with them.

While cooperation seems to be the essence of the relations within organizations, the competition seems to be, in a prevailing view, the essence of inter-organizational relationships (IORs). This boundary between cooperation and competition, however, does not necessarily coincide with the legal boundaries of a firm. There may be cooperation and competition between firms within them – two dimensions that intersect themselves (Jarillo, 1993).

An efficient way to compete is through the creation of strategic alliances, i.e. short or long voluntary arrangements between different organizations. These arrangements enable organizations to gain or sustain competitive advantages over competitors, by optimizing operational costs and minimizing coordination costs.

The formation of alliances, partnerships, networks and other formats of IORs has been adopted by organizations as a strategy for the development of innovative products with greater quality, speed and low cost. In addition, the relations between organizations also enable the combination of skills, sharing costs and risks and investment in R&D. Generally speaking, competition between organizations has, as one of its effects, led to high specialization, as the organization seeks to focus its activities on their best skills. Therefore, it is necessary to form strategic alliances, linking up with other organizations with complementary skills, aiming to better serve their customers. There are two ways of understanding IORs established for innovation. One is normative and focuses on the knowledge that can be more easily managed. The other is interpretative and deals with tacit knowledge and social capital. This paper is focused on the first one, also characterized as network capital (Huggins *et al.*, 2012),

which is a calculative and rational form to achieve economic returns by developing an innovative product.

An inter-organizational project, according to Jones and Lichtenstein (2008), appears as a kind of strategic alliance, or a strategic network. Multiple organizations work together in the same activity for a period of time. They appear as an alternative to coordinate processes, products and services in an environment of high uncertainty and competitiveness. This type of IOR has been seen in sectors such as movies, construction, fashion and computing.

As an example, one can cite the case of the partnership between Disney and Pixar in favour of industry transformation of animated films in the United States. In this case, there was a clear possibility of complementarity in the following areas: cartoons creation; power distribution; technical skills. Furthermore, the emergence of new forms of organization between actors of the beef chain has been identified in the Brazilian food sector. Research conducted in this sector showed that these initiatives are related to the association between farmers, slaughterhouses and retailers, predominantly named marketing alliances. This kind of alliance seeks to increase product value through differentiation strategies (De Barcellos *et al.*, 2006).

However, the development of products aiming to add value appears as one of the most complex processes within the food sector, due to financial resources involved (Brannback and Wiklund, 2001), as well as technological and management capabilities (Thamhain, 2003). Different kind of information and skills are needed, so it must involve a multidisciplinary team. Accordingly, an inter-organizational project appears as a viable alternative to the development of a new product.

Due to the growing concern among consumers related to the food quality and lifestyle (health), and also the safety of the products offered (Grunert, 2002), the development of innovative food products appears as a priority for the industry. The World Health Organization and Food and Agriculture Organization stated that feeding patterns and changes in lifestyle reduce risk factors for diseases. This has led consumers to new consumption trends, increasing the demand for healthier food products. The food industry has promptly reacted and health and wellness market segment has been growing since then. Until November 2013, it has reached global value sales of US\$ 733 billion, which represents 7.2% of growth-rate for the year 2012/2013 (Euromonitor, 2013b). The Brazilian health and wellness food market is growing and the *per capita* spend in this food category reached the amount of US\$ 188.7 in 2013 (Euromonitor, 2013a).

The health and wellness market segment have distinct food categories, such as: 'better for you', 'naturally healthy', organic, intolerance (e.g. casein, lactose), vitamins and dietary supplements, traditional herbal products, slimming products, sports nutrition and the fortified and/or functional foods (FF). In Brazil, all the food or ingredient that claim functional properties, besides the basic nutritional functions, will also trigger beneficial health effects and should be considered safe for consumption without any medical supervision.

FF represents one of the most interesting areas of innovation in the food industry and it has an important role in the current socio-economical context (Annunziata and Vecchio, 2013; Betoret *et al.*, 2011). The category is driven by the society's contemporary needs, such as the growing middle-class demand for greater functionality coming from food and beverages. Indeed, Brazil's Health and Wellness market over 2012/2013 is expected to be the third strongest globally, being followed by China and the US (Euromonitor, 2013a)

From the perspective of the food industry, the development of new products is an important source of innovation, differentiation, added value (Matthyssens *et al.*, 2008) and competitive advantage in the global agri-food scenario (De Barcellos *et al.*, 2009). In fact, FF R&D is considered a complex, risky and expensive process when compared to conventional ones (Siró *et al.*, 2008). Thus, as Matthyssens *et al.* (2008) state, the R&D processes requires some extra efforts, such as a more open and flexible approach so that the products can be successfully launched. In that sense, large companies seek for closer ties with suppliers and other partners, in order to extend control over the supply chain. With that kind of strategy such companies can achieve greater efficiency in the transaction chain, aiming at cost and uncertainty reductions in order to foster the innovative product development.

Yet, for small and medium enterprises (SMEs), cooperation may be the only alternative for the development of a new product – due to the risks associated with this type of product. As shown by Balestrin *et al.* (2008) in a network of SMEs in the clothing business, the collaborative strategies implemented have brought benefits, such as improvements in production processes, costs reduction, own brand construction, as well as the socialization of the best practices among all actors involved. Corroborating with that view, Khan *et al.* (2013) affirm that in the context of FF it is imperative for companies to maintain and sustain reliable IORs with different partners; to reach it, companies also need new management skills. As it can be seen, the establishment of appropriate partnerships and the

efficient management of a product development project are important for reaching success.

The formation of relationships between organizations and how they occur has been the focus of attention for some researchers. The reasons that led for the existence of those relationships, the barriers encountered and the results achieved in partnership arouse interest among researchers, as illustrated by Oliver and Ebers (1998), Brass *et al.* (2004) and highlighted by Cropper *et al.* (2008).

Serenko *et al.* (2010) highlight the lack of communication between academics and practitioners in this field of research. In that sense, this study seeks to answer the following question: 'what are the main motivations and barriers perceived by the actors/members involved in an inter-organizational project of new food product development?' To answer this question, this research aims to investigate the dyadic relationship between a Brazilian food co-operative and a technological centre. The authors tried to identify, through the perception of the actors involved, the motivations and barriers faced in establishing this type of IOR. Nieto *et al.* (in press) found that family firms are more averse to risk and less innovative than non-family firms. In our study, a rural food cooperative, which consists of small family producers, could be considered even less innovative, where innovation process is basically incremental and there is no formal R&D department. In this way, this study gives a contribution highlighting the motivations for IORs in this kind of organization, which is traditionally not used in developing relationships with actors outside the supply chain (Huggins *et al.*, 2012) in a mature food area such as dairy sector. This study can also contribute to bridging the current research with the Brazilian food sector reality, which consists mainly of family business and co-operatives formed by small producers. The establishment of IORs is still new in this business context.

In addition to this introduction, this paper is organized as it follows: section two presents the theoretical background. Section three presents the methodology. The following section presents the case study. Section fifth shows the results and conclusions while the sixth and last sections present some suggestions for further researches.

2. Inter-organizational relationships

The number of studies about IORs is continuously growing, providing theoretical and empirical issues to be explored (Brass *et al.*, 2004; Cropper *et al.*, 2008). The study of Brass *et al.* (2004) shows that the establishment of IORs, such as networks, enable an information transfer

that provides similarity, imitation and the generation of innovations; it mediates transactions between organizations and cooperation between people, and also provides differentiated access to resources and power. Wubben *et al.* (2012) highlight the positive effect of incoming knowledge spill overs on innovation cooperation, especially for SMEs partnering with research centres and other actors.

For Gulati *et al.* (2000), the formation of strategic networks is defined as a composition of inter-organizational ties with strategic significance for those involved. They can provide the company with access to information, resources, markets and technologies, with the advantage of knowledge, scale economies, and enable organizations to achieve strategic objectives such as risk sharing, outsourcing stages of the value chain and the division of other organizational functions. Oliver (1990) shows in her study six contingencies considered critical for the establishment of IORs. Table 1 presents a summary of each of these contingencies.

Table 1 shows the necessary contingencies for the establishment of an IOR. They are all voluntary; the exception occurs in the Necessity contingency, which must be established based on legal or regulatory requirements needs. Among the six contingencies presented by Oliver and Ebers (1998) and Oliver (1990), three of them address the company's resources issue as a reason to form an IOR – referring to the Resource Dependency Theory. When performing a network analysis on IORs, Oliver and Ebers (1998) showed that this is the dominant theory in this field of study. Oliver (1990) provides a framework with five out of the six contingencies previously presented, illustrating its features on five types of relationships, among of them figure the joint projects, as it can be seen in Table 2.

Temporary working projects, as shown in Table 2, can be understood as inter-organizational projects. For Oliver (1990), this IOR exists when two actors work together to plan and implement a specific activity – a project – without forming a new organization (a NewCo, according to Dacin *et al.* (2008)). Yet, the author reinforces the idea that resource scarcity is a strong prerequisite for the development of IORs, because when the resources magnanimity in the environment is insufficient, the organizations do not have the capacity to generate them individually. Therefore, the establishment of IORs is an alternative to project execution.

Antecedents and motivations, results or consequences

The understanding of issues that precede the formation of an IOR is relevant to comprehend their barriers and outcomes. Brass *et al.* (2004) evaluated a series of researches performed

Table 1. Summary of the critical contingencies to form inter-organizational relationships (IORs) (adapted from Oliver, 1990).

Critical contingency	Description
Necessity	Legal or regulatory requirements may impel organizations to establish IORs
Asymmetry	The IORs which seeks the ability to exercise power over another organization/ resources (competition)
Reciprocity	The IOR is stimulated by a goal or a common interest (collaboration, cooperation)
Efficiency	Contingency internally oriented: the formation of IOR is focused on improving the rate of input/ output processes
Stability	The establishment of the IOR may be an adaptive response to the uncertainties imposed by the environment
Legitimacy	Institutional environmental pressures causing organizations incremental legitimacy, possibly through IORs

Table 2. Summary of the critical contingencies from inter-organizational relationship projects (adapted from Oliver, 1990).

Relationship	Critical contingencies				
	Asymmetry	Reciprocity	Efficiency	Stability	Legitimacy
Temporary working project	Larger control over resources access	To facilitate the exchange of customers or employees	Reducing the costs of social services	To share risks in the assembly of new projects	To show cooperation rules

within networks and organizations. The authors' analysis highlights the antecedents and consequences of networks separated by levels of analysis (see Table 3 for inter-organizational level). They point out inter-organizational projects as a form of IOR.

As it can be seen in Table 3, the antecedents of inter-organizational networks basically involve the motives, learning, trust, norms and monitoring, equity and context (Brass *et al.*, 2004). The highlighted motives are the acquisition and access to resources, the uncertainty involved, the need for legitimacy, the achievement of collective goals (consistent with Oliver, 1990), access to markets and technologies, economies of scale and scope, learning shared, the reduction of opportunism and risk sharing (Gulati *et al.*, 2000). Mutual learning and the experience obtained through it, is seen as a way to get attention in the network. The trust, in its turn, is considered a key factor for the success of IOR. Having norms and monitoring can be useful within IORs, since controlling come from both (or more) sides. Equity appears as antecedent considering

that the similarity may facilitate the partnership. Finally, the context (historical, institutional, and cultural) as in most of the relations, also receive attention when sign up for an IOR.

As a consequence, Brass *et al.* (2004) points the imitation, innovation, survival and firm performance. The imitation

Table 3. Summary of the antecedents and consequences of inter-organizational networks (adapted from Brass *et al.*, 2004).

Networks	Antecedents	Consequences
Inter-organizational	<ul style="list-style-type: none"> • motives • learning • trust • norms and monitoring • equity • context 	<ul style="list-style-type: none"> • imitation • innovation • firm survivor • performance

appears as a consequence because it is facilitated by this type of inter-organizational configuration. Innovation is stimulated by the sharing of information, especially among companies that cooperate but do not compete. Authors argue that the formation of IOR not only affects innovation as a result, but also the internal innovation such as the investment in R&D. The survival of the organization is also considered a consequence for being favoured by the exchange of knowledge, access to information and resources, among others. Finally, authors highlight the performance: the sharing of different aspects among IOR participants favours the achievement of better results of individual organizations.

Inter-organizational projects

There are different kinds of knowledge involved in inter-organizational projects. Bhagat *et al.* (2002) propose that there is a knowledge *continuum* that is easily interpreted, systematised, communicated and managed to another level of knowledge – that is more difficult to manage, communicate and transfer. This *continuum* moves from tacit to explicit knowledge. In this paper, inter-organizational projects can be defined as projects involving two or more organizations to jointly achieve individual goals and/ or collective, creating a product. This partnership occurs for a limited period of time, between a client and a contractor. The contractor, in turn, may hire subcontractors as needed (Jones and Lichtenstein, 2008). IORs for projects differ from other forms of coordination projects (such as joint ventures and alliances) exactly because they are temporary; the relationship to reach the common goal has a pre-determined period.

For Jones and Lichtenstein (2008), in this type of IOR, organizational actors can be both dependent and independent. The activities are coordinated only during the lifetime of the project, according to their temporal dynamic. This dynamic influences collaborative activities between independent organizations. Authors state that the understanding of collaboration between organizations can be performed from the perspective of an inter-organizational project. These, therefore, can be analysed in two dimensions: temporal and social embeddedness. The concept of embeddedness (Granovetter, 1985) concerns to the importance of relationships – personal and concrete – and networks of relationships, seeking to generate confidence, expectations, besides creating and enhancing norms.

According to Granovetter (1985), the social embeddedness focuses on reducing opportunistic behaviour. From the theoretical viewpoint, the overlapping and trust

creation in relationships are important for the transfer of tacit knowledge, a kind of knowledge present in most emerging technologies, in which the uncertainty level is larger. According to Jones and Lichtenstein (2008), both embeddedness dimensions are used to reduce the uncertainty involved in performing IORs. Social and temporal embeddedness of projects provide techniques for managing uncertainty, improving their ability to adapt to the collaboration. Other elements, such as the length of the project, the kind of relationship (contractual or informal) established between the organizations, the sector dynamics and the size of the companies might also influence the IORs. In this paper, it is suggested that small companies or co-operatives, that have scarce resources and high risk to develop R&D activities, would develop collaborative product development as innovation strategy.

Food product development projects

The development of new, original or innovative food products, or the improvement, modifications of products that already exist are tasks that the R&D team must strive to achieve. When technical knowledge is distributed across the borders of organizations, they seek to acquire technical capabilities through the establishment of IORs. They may not have enough knowledge about the service or technology to be accessed or absorbed (Cohen and Levinthal, 1990). Jones and Lichtenstein (2008) emphasize the importance of the uncertainty management, because temporary projects favour this condition.

In the global context in which competitive and transnational corporations – that seem to ‘pull’ the development of new products (Raud, 2008) – are inserted, one sees the internationalization of R&D projects. Multifunctional teams are geographically distributed and interact over the internet for the development and commercialization of products in different markets, and in different cultural realities. It is essential that this interaction may occur in a fluent and agile way, consistent with the evolution of consumer demand and competitiveness. Therefore, the management of product development is also an important question to the success of the new products research, development, and launching on the market.

Lima and Révillion (2006) identified through case study the competitive strategies of the dairy sector. According to them, the development of FF is motivated by the prospect of incurring lower investments in R&D. The authors also report a lack of integration between marketing and production sectors (or sometimes R&D), characterizing

the low encoding and transfer of technical and marketing informations.

Vieira *et al.* (2000) have studied cases of SMEs in Rio Grande do Sul (RS, the southernmost State in Brazil). They argue that the globalization of supply chain led to cooperation agreements – such as strategic alliances. These have become an important tool for competition empowerment. Furthermore, authors state that the different forms of cooperation (horizontal or vertical) can be considered an option for local businesses that have competitive difficulties due to the concentration of transnational companies in the agribusiness sector.

Finally, Cabral (2007) shows in his analysis of the Brazilian food industry that there are few partnerships for R&D between the private and public sector, although this variable seems to be very effective in leveraging the innovative activity of firms. Likewise, De Barcellos *et al.* (2009) suggest that Brazilian consumers are likely to try new products, and that the domestic industry should seize this opportunity to launch new food products.

3. Methodology

A case study was the methodology chosen for this research. Thereby, this study may contribute to provide empirical evidences regarding to the establishment of IORs for the development of innovative products, illustrating the type of relationship that can assist Brazilian small companies or co-operatives to compete with products launched by transnational companies. Given these objectives, the first step was to collect secondary data, followed by two semi-structured personal interviews that were made with both actors involved in the IOR. Both respondents were questioned about aspects involving the antecedents, motivation, risks and barriers to the establishment of inter-organizational projects, focusing on the development of innovative food products. Both interviews were crossed to analyse the dyadic perspective. A brief description of the interviewed actors is therefore presented.

Centre of Excellence in Advanced Technologies of the National Service for Industrial Apprenticeship – Regional Department of Rio Grande do Sul State

The National Service for Industrial Apprenticeship (SENAI) was created in 1942 as an initiative of the industrial sector. Its mission is not limited to professional and technological training, as the Centre also contributes to the competitiveness of Brazilian industry by developing innovative products and processes. The Centre of Excellence

in Advanced Technologies (CETA) is a division of SENAI in the Regional Department of RS, which is responsible for bringing technological innovation to benefit the industry throughout collaborative efforts, promoting and contributing to the technological, economic and social development in South Brazil (SENAI, 2012).

Its main activity is to conduct collaborative research with a focus on technological innovation applied to the Brazilian industry, based on the Fraunhofer model (Fraunhofer Society of Germany). Fraunhofer is an integrated network of intermediate research institutions in Germany that support industry and technology transfer as part of a national innovation eco-system (Reid *et al.*, 2010). A National Innovation System is the 'eco-system' of institutions, agencies, bodies, funding flows, technology and knowledge transfers, and channels, which supply a national economy with innovations. CETA promotes integration of science and technology institutions with the real needs of the industry. In this way, CETA also helps companies to submit projects to funding opportunities (i.e. funding from the Brazilian Service of Support for Micro and Small enterprises).

The greatest exponent of this kind of activity is the annual funding from the institution itself, called SESI SENAI Innovation Funding. They offer support for the promotion of research, process development, product innovation and social technologies (SENAI, 2012). Normally, in these situations, CETA proposes a partnership to develop these innovative projects. If it is approved, CETA usually manages the project and provides technical support.

Authors carried out a semi structured interview with the CETA Food, Beverage and Pharmaceutical Sector coordinator (named as Interviewee 2).

A south Brazilian dairy co-operative

The chosen dairy co-operative (named here as Coop.) is the oldest in activity in Brazil (ca. 100 years of activity). Currently, there are over four thousand members and over a thousand employees engaged in operating a supply chain that combines the control over the production of milk and meat. About 250 million litters of milk are manufactured annually. Of those, approximately 16 thousand tons correspond to dairy products. Today the Coop. manufactures 30 kinds of cheeses and over 206 refrigerated dairy products.

This Coop. is the first one to reach the ISO certification in Rio Grande do Sul State (RS). In addition, the Coop. won in 2010 a Top Marketing regional award on the food category. Their innovative dairy product was pointed as a milestone

for the dairy industry. Nowadays, the Coop. produces two functional food products already recognized by the National Health Surveillance Agency (ANVISA). Both of them have probiotic cultures that naturally benefit consumers' digestive health.

Authors have chosen this Coop. because it is the first, among the dairy industries from RS, to obtain recognition of functionality from the regulatory agency. It means it was the first Brazilian company to produce a cheese classified as functional. To reach the goal of this study, authors have interviewed the responsible of the Coop. R&D sector (named as Interviewee 1). Moreover, the Coop. is currently developing an inter-organizational project for the development of an innovative and FF product. This project is conducted in partnership with the CETA/SENAI-RS.

The project was approved by the SESI SENAI Innovation funding, obtaining financial support from SENAI (both National and Regional) for its development. In addition to financial assistance, CETA assists the Coop. in project management all the way from the planning stage until the product is launched and reaches the final consumer.

The proposal is to develop an innovative dairy product, savoury and functional, aiming to stimulate satiety and to help to control overweight. The innovation consists in the use of a functional ingredient (patented) that is supposed to suppress hunger sensation, increasing the period until the next meal and also reducing the amount of food ingested.

4. Results

Inter-organizational project: the development of an innovative dairy product

When asked about the reasons for the establishment of inter-organizational projects, the Interviewee 2 (CETA) says that the main motivation is to contribute to the technological, economic and social development. It is known, however, that each project established by funding projects brings financial gains to the technological centre. In Brazil, technological centres are related to the technical and scientific development system. It means that most R&D initiatives are linked to public funding, for example funding from the Brazilian Ministry for Science, Technology and Innovation (MCTI).

However, according to the perception of Interviewee 1 (Coop.), one of the main motivations for participation in an inter-organizational project is the ability to finance part of the costs involved, as can be seen in the report below:

The development of an innovative product provides and requires investments in research and partnerships with educational institutions, for example. The Coop. has in its budget a certain amount for investment in development of new products, but that would not be enough to cope a project such these. Furthermore, the contact with universities is facilitated thorough the CETA, as it already has the contacts. Thus, the intention is to develop the product, joining forces and expertise in a multidisciplinary team, where experiences can be developed and exchanged – beyond the financial incentive. (Interviewee 1)

The reasons cited by the company are primarily linked to the economic aspect, but also to the knowledge – shared by the multidisciplinary team. As shown by Brass *et al.* (2004), the sharing of costs and reduction of uncertainty are considered the main reasons for establishing an IOR for a R&D project execution. Another prominent motivation is the access to technologies; considered by the Coop. as being easier through the partner.

In terms of project flow, usually firms show the interest to develop innovative products or process and thus the first contact with the CETA is made. The funding promoted by the institution itself creates a real opportunity for the viability of this type of project. However, Interviewee 2 states that many food companies still ignore this opportunity. There is, therefore, a lack in the communication of the ways to innovate.

When Interviewee 1 was asked if the innovative product in question would be among the company's priorities, even without the partner financial assistance, the answer was 'no'. The reason is because the functional claim from the innovative ingredient applied in this project is currently not recognized by the regulatory agency (ANVISA). To obtain it, it would be necessary to perform clinical trials (in humans). The Interviewee 1 completes: 'if by its own, the company should have to make large investments that would not be affordable'.

In addition, projects supported by funding proposals have requirements regarding the work schedule and accountability. In this sense, aspects related to the delay of outsourcing suppliers were reported as a barrier by both actors involved. Especially due to the financing modality of SENAI, most of the services required for a project development needs to be hired through competitive bidding, a highly bureaucratic and time consuming process.

That is the reason why the Interviewee 1, when asked about the barriers faced by Coop. with the IOR, reports performance aspects of the schedule: the slowness in the hiring process ultimately affects the project's progress. There is a deadline to be reached and extensions possibilities are rather restricted.

As pointed out by Brass *et al.* (2004), innovation is a consequence of the establishment of IOR. The Coop. claims to have a clear idea that innovation can help them to compete, but when asked about the possible gains with the IOR project, there are agency conflicts and firm internal barriers. The Interviewee 1 clearly sees the gains of the partnership, but the Coop. management was initially reluctant when the first partnership proposal was presented. This is due to an antecedent: the Coop. has a prior successful experience regarding the launch of an innovative product, without the establishment of an IOR.

However, although both projects are related to FFs and considered innovations in the Brazilian market, the functional ingredient used in the prior individual Coop. project had already a functional claim registered by the ANVISA before its development. This fact dramatically reduces the investment involved, because in this case is not necessary to perform clinical trials. On the other hand, the new ingredient, as stated earlier, still needs to be approved by ANVISA, which raises significantly the investment. When the project finishes, there is an expectation from the Coop.'s R&D sector of proving to the Coop. management how important the partnership was. Here we highlight the legal need as pointed out by Oliver (1990) as a contingency factor to propel the establishment of IORs.

Moreover, as a result, learning is seen by the Coop. as a positive consequence of the partnership with CETA. Sharing control techniques and practices of project management are highlighted by Interviewee 1 as an important issue in the IOR: 'I hope that the company agrees to continue working in this way', he argues. The Interviewee 2 also shares this reasoning, considering every project as an opportunity to inter-organizational learning.

The performance, suggested by Brass *et al.* (2004) as a consequence of the establishment of the IOR, is also seen by the Coop. as a gain. The company believes that the investment involved in the process of product registration will be compensated by the sales of the product. As Interviewee 1 states, 'the product has a clear market potential, considering the current conditions of the population. Furthermore, the launch of this product should enhance our brand value, provide healthiness, and show innovation and concern for the consumer'. For CETA, the performance can be considered the dissemination and consolidation of the services provided by the SENAI: all the technical disclosure (articles, brochures, etc.) of the new product should be linked to SENAI. A summary of the responses obtained in interviews with the actors involved can be seen in Table 4.

Dyer and Singh (1998) suggest that the critical resources of an organisation help them to measure the firm's boundaries and are embedded in resources and inter-firm routines. These authors argue that the relationships between businesses are important for understanding the competitive advantage. They identify four potential sources of advantage in inter-organizational routines: specific qualities of the relationship; fragmented knowledge of

Table 4. Summary of the interviews with the dairy co-operative and the technological centre.

	Dairy co-operative	CETA/SENAI-RS
Motivations	<ul style="list-style-type: none">• sharing knowledge and efforts• funding partner for the project	<ul style="list-style-type: none">• contribution for the technological development of the RS State• financial gain trough the projects' management
Barriers	<ul style="list-style-type: none">• project deadlines• slowness in the process of hiring subcontractors	<ul style="list-style-type: none">• firms do not know that funding possibilities exists• slowness in the process of hiring subcontractors
Results	<ul style="list-style-type: none">• access to new practices of project management, learning• establishment of relationships with research institutions• new product with great market potential• expansion of functional products line	<ul style="list-style-type: none">• access to new knowledge related to technology, learning• disclosure and consolidation of SENAI institution

routines, complementary resources and skills, and effective governance.

In this regard, it is worth noting a comment made by Interviewee 1, with regard to the absence of competitive advantage (failure) in the establishment of IORs for an R&D project: '...it is important to highlight in this kind of project that the results may be met or not', sometimes due to the lack of critical resources or mismanagement of the IOR. From a strategic perspective, the ability to have a relationship with other organization makes the competitive advantage to be no longer considered as a result of individual critical resources.

As showed in Table 4, there are some common objectives in the IOR, as well as a complementary relationship between the actors. It is also interesting to highlight that although both approaches (competition and cooperation) may reside together (Jarillo, 1993), in this case cooperation seems to be the essence of this relationship. This kind of IOR makes it possible to have a predominant orientation for consumer satisfaction.

5. Conclusions

Betoret *et al.* (2011) remind us about the necessary attention that must be given to investments in product development and failures in functional food product launches. Historically, as a consequence of some negative results, the main strategy in the food industry has been characterized by the parsimonious development of innovations. Many of them are based only on brand extensions, following the same line of products, which embraces lower risks (Grime *et al.*, 2002). However, studies conducted in Brazil (De Barcellos *et al.*, 2009; Cabral, 2007) found that the food industry could be missing a great market opportunity.

To change this scenario, as well to spread risks, the Coop. has established an IOR with CETA for the project development of an innovative food product. It is important to point out that the project received public funding, which is a characteristic of the Brazilian science and technology system. Basically, in this relationship, the company gives the working hours of their employees and also the raw materials. The technological centre, in turn, provides its expertise in management, in addition to technological solutions research to meet the project goal. CETA also provides working hours of his team, as well as part of its infrastructure.

Inter-organizational projects may be understood as projects in which organizational actors solve pressure problems

regarding uncertainty in demands and transactions. The demands' uncertainty reverses on markets through rapid changes in consumer preferences and tastes – which turns into searches for advanced technologies for the development of new products that would overlap the existing ones (Jones and Lichtenstein, 2008). This form of uncertainty in demand underscores the need for more flexible and adaptable organizational structures.

Inter-organizational projects are an alternative as they offer flexibility, more than internal projects and individual organizations normally do. The empirical results from this research, analysed under the perspective of IOR, indicates that the Coop. is venturing by bringing to the market an innovative product that, thanks to the collaborative effort with CETA, can bring real benefits to this regional co-operative. The partnership reduces risks and costs by integrating research expertise with manufacturing and market knowledge. Such results contribute to the understanding of IOR and network capital (Huggins *et al.*, 2012) in the Brazilian food sector. In fact, food networks are still incipient in the country and therefore, initiatives aiming to increase knowledge and innovation by bringing development to the food market are certainly welcome.

Our findings are aligned to Huggins *et al.* (2012) study, where network capital is found in IORs with other organizations outside direct market actors. Abdirahman and Sauvé (2012) agree that innovation is a very complex and multifaceted phenomenon where different actors, knowledge and information flow must be involved. In our case study, the dyadic relationship is motivated by the national innovation system, but is still not adopted by many SMEs and co-operatives. There are several reasons for that: lack of communication/knowledge about this kind of IOR, bureaucracy, difficulties to manage the development project, distance between the location of the food companies/co-operatives (rural area) and research centres, among others.

In addition, it is well known that health is the most significant trend and is motivating innovations in the food and beverage world market. Brazil is one of the leading countries in food production and the FF market in the country grows 10% per year, three times more than conventional food products market (De Barcellos and Lionello, 2011). The problem of overweight and obesity in populations is also encouraging the development of functional and healthier food products. Hence, the launch of a healthy product that provides the feeling of satiety and helps in the control of obesity, contributes to the prevention of a public health problem. In this context, the ongoing project from Coop. and CETA fills an eminent market need.

Another indirect benefit from the launch of the new product lies on the market consolidation of the Coop. as supplier brand for functional and health products, facilitating the growth of the Coop. and the maintenance of more than 12 thousand direct jobs currently provided by the company. The regional development may also be considered a spill over of the IOR. The consolidation of the cooperative market contributes to social and economic development of its members who are small farmers in the mountain region of RS. The findings of this exploratory study might also help to promote and engage other small food companies in IORs aiming to develop innovative products.

Finally, it is suggested to further research this topic in other cultural contexts, analysing the results of cooperation strategies and pointing to other SMEs develop research projects and innovative product development. It is also suggested a comparative study of the strategies and processes of innovation in Brazilian companies with local operations that compete with multinationals (such as Danone and Nestlé), those which usually hold foreign capital for investment, large-scale production structures and different market knowledge. Empirical studies are useful to approximate academic knowledge and current practice, as suggested by Serenko *et al.* (2010).

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