Dependence of companies on inter-organisational networks: an analysis beyond the benefits generated

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Abstract: The objective of this study is to verify the drivers of company-network dependency relationship and how these are evaluated in different phases of evolution of inter-organisational networks. A qualitative study was carried out through semi-structured interviews conducted with 20 entrepreneurs from ten different networks that were intentionally selected. Resources dependence theory and its assumptions, as well studies about benefits or competitive factors generated by collaborative relations between companies, were used as a base to identify and define the variables of this study. The results demonstrated that the generation of the dependence of the companies happens with the evolution of the networks and with their capacity to generate competitive advantages for them. The empirical evidences showed that the dependence of the companies with the networks is due to several resources generated by them.

Keywords: small companies; dependence; resources; evolution of networks; inter-organisational networks.

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1 Introduction

Increasing uncertainty and complexity in the business environment led to the rapid structuring of strategic relationships (Lin, 2012) such as business networks. Based on the resource dependency theory (RDT), the central idea of companies cooperating with each other is the idea that, by themselves, they can't afford all the resources they need to make their business effective. Such strategy has become a way for companies, mainly micro and small to compete with larger ones through benefits generated by the network, such as gains in scale, bargaining power and the improvement of marketing actions' quality. Companies find, in collaboration, a way to add value to the products and services offered to their clients and, with that, to increase their competitiveness in the market.

Business networks can be defined as a new organisation consisting of three or more companies that are working together towards a common goal (Popp et al., 2014). In this article, more specifically, this definition is directed o those networks that constitute a formalised legal organisation, which, like a single company, also needs a management and governance system to realise its activities and achieve its objectives.

Vinhas et al. (2012) expose that the central purpose of networks is to bring together attributes of companies that allow their adaptation to the business competitive environment supported by standardised and decentralised actions. The achievement of the objectives proposed by inter-organisational networks generates different benefits to the member companies. Some studies have already been developed on this issue, such as Centenaro and Laimer (2017) and Deboçá and Martins (2015).

The generation of these benefits to companies is directly related to their dependence on the networks in which they are inserted. Emerson (1962) explains that "the dependence of an actor A on B is (1) directly proportional to the motivational investment of A in goals mediated by B, and (2) inversely proportional to the availability of such goals outside the AB relationship" (p.32). If the company (actor A) finds in the network (actor B) the objectives (resources) it needs and there is little alternative to finding this resource outside of 'B', then the dependency exists. The central issue is that organisational stability is achieved through the control and negotiation of dependencies with companies for the purpose of obtaining a stable flow of vital resources and reducing environmental uncertainty (Pfeffer and Salancik, 1978).

However this dependency negotiation mentioned above is not clear, since companies always coexist in a duality of dependence: one on the environment and the other on the relationships they establish. In the case of networks, we also have to highlight that the relational dynamics changes with the evolution of the network and this affects the company's dependence. So, how does the relationship of dependence of partner companies with the networks occur along the evolution of the networks? These are the points that this study intends to advance.

In general, the most common response to dependence on the environment is the attempt of organisations to develop some kind of relationship that will minimise the loss of their autonomy and ensure their survival (Provan, 1984). However, how is this seen in organisations? From this perspective, this paper aims to verify which factors drive the dependence relationship between companies and networks and how these are evaluated in the different phases of the evolution of inter-organisational networks.

Studying dependency in this article will first show the extent to which benefits are decisive for companies to remain in the market in which they operate. In addition, it will allow us to understand the underlying structures organised by the networks to provide such benefits. The second point is that this article will allow a deeper understanding of member companies' dependencies in view of RDT, either with the network or with the environment, and the consequences from this. For Drees and Heugens (2013) the premise that all organisations are critically dependent on other organisations for acquiring or supplementing the vital and necessary resources is reciprocal.

2 Theoretical background

This section is divided in two main parts. First, we describe factors that drive network members companies to became dependent on the network they are inserted. The literature used here, consist mainly on the benefits and advantages arrived from joining an inter-organisational network. On the second part, we address the business environment and its influence on companies' network dependence.

2.1 Factors of companies dependency

In general, inter-organisational networks are an appropriate organisational alternative, especially for small companies (Best, 1990) that do not have the space for large companies. These are competitive and successful in market control, especially by using lower prices of products and services offered. These prices allow them to be more competitive than small companies in the industry.

However, through cooperation, small companies interact with each other to acquire greater bargaining power in regards to their suppliers, as well as to reduce the costs of certain activities and complementarity of resources that can help them compete with other larger companies. Van Waarden (1992) explains that gains in scale and market power give partner companies, and the network as a whole, the possibility of making trade agreements under exclusive conditions (previously unattainable) and expand bargaining power in the different economic relations. In this way, a company will not choose to leave the network if the economic benefits are such that they exceed the individual investments (financial, time, human, etc.) made by entrepreneurs. The weighting of costs (realised investments) versus benefits is positive for the member companies in this case.

Another point studied and conceived as a benefit generated by business networks is learning. In Kogut's (1988) view, business networks emerge as a strategic response to environmental change and in a perspective that their members achieve skills, knowledge and technical ability through learning. For Kay (1998) this type of cooperative arrangement provides the development of relationships that enable and facilitate the access to non-existent information in the company. In this line of understanding, Muthusamy and White (2005) add that social interactions and exchanges occurring in a collaborative way between companies lead to successful learning.

Parallel to learning is the benefit of innovation for companies operating in networks (Burg et al., 2014). Innovation can be defined as a process whereby the creation, diffusion, and transformation of ideas occurs for the production of new or improved products, services or processes obtained from knowledge (Popp et al., 2014). The innovation and knowledge and learning exchange activities mentioned above are closely linked since they contribute to the specialisation of the activities and the generation of more knowledge itself.

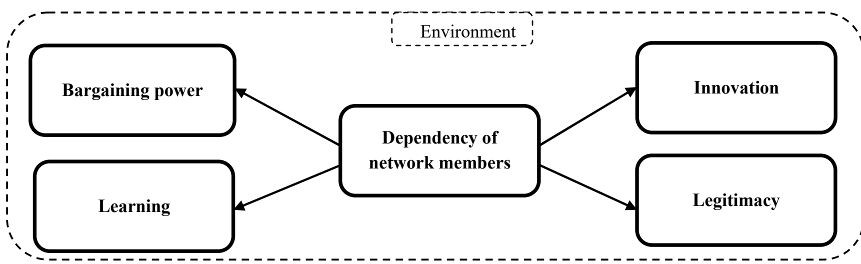
Westerlund and Rajala (2010) explain that there is a direct and positive relationship between innovation and the process of the collaboration of member companies. In this sense, Provan and Lemaire (2012) describe how innovation can lead to better service delivery among the organisation's members. They explain that by operating in networks, companies have the possibility to 'stretch' and leverage limited resources and reinforce learning, which leads to greater innovation and a better quality of services being provided.

The actions and joint activities carried out by the companies in the network end up impacting on the organisational legitimacy of the network (and consequently of the companies that are part of it). Legitimacy, in Suchman's (1995, p.574) conception, can be defined as a "generalized perception or assumption that the actions of an entity are desirable, proper or appropriate within some socially constructed system of norms, values, beliefs, and definitions."

In the inter-organisational context, Dimmaggio and Powell (1983) mention that when participating in a network, companies can become recognised in their area of activity, receiving greater credit and recognition from the public. This guarantees greater legitimacy in corporate actions and reshapes the importance of the company in its institutional context. For Provan and Kenis (2008) partnerships, alliances or networks of companies are seen as desirable by external agents, and organisations form or join a network so that they can serve clients more effectively, attract more resources and gain further legitimacy.

We resume the companies' network dependence factors on the network in Figure 1.

Figure 1 Dependence factors of the members to the network



Source: Elaborated by the authors

Figure 1 involve all factor analysed in this study. We highlight the environment influence on companies' dependence. As Klein and Pereira (2016) explain, organisations need to collaborate with other organisations in inter-organisational relations due to the fact they do not possess all the resources required to perform their activities and therefore they depend on exchange relations to achieve their goals. So, this fact induces companies to collaborate. We explain this environment influence on the next topic.

2.2 Business environment influence on companies' network dependence

The RDT is based on an open system perspective, placing the organisation as coexistent in the environment, that is, organisations depend to some degree on other organisations (depend on the business environment), since none of them fully controls all conditions, and resources necessary for their survival (Lawrence and Lorsch, 1967; Pfeffer and

Salancik, 1978; Aldrich, 1976). This perspective contrasts with the conceptualisation of organisations as a closed system, in which they behave as operational entities that aim achieving specific goals.

The central premise of the resource dependency perspective is that the business environmental conditions faced by organisations mark the decisions made within them. Managing external relations is the key to organisational survival and is strongly influenced by changes in the business environment. For Pfeffer and Salancik (1978), while organisations seek to exempt themselves from being controlled, they seek stability and control over the exchange of resources essential to their perpetuity.

Within this open-system perspective, Scott (1987) and Aldrich (1976) explain that 'resources' can be understood as capital, infrastructure, people, information, social and political support, technology, and legitimacy (factor that we addressed in the previous section). In this sense, Oliver (1990) and Alter and Hage (1993) conceptualise 'resources' as something available or necessary for the organisation with the purpose of achieving self-interest, as well as the collective goals in collaborative relationships. According to the DRT, the need to acquire resources, such as those cited, creates dependencies between organisations (Pfeffer and Salancik, 1978) and, as a consequence, these dependencies serve as the basis to interchange of resources between enterprises (Aldrich and Pfeffer, 1976; Aldrich, 1976).

Thus, given the fact that organisations transact with each other to obtain the necessary resources, the control over them becomes a key in the relationship, since it provides power over other organisation, which becomes dependent (Pfeffer and Salancik, 1978; Provan et al., 1980; Galaskiewicz, 1985; Alderich, 1976; Child and Faulkner, 1998). In other words, an organisation may be influenced by others who have substantial or exclusive control over resources that are critical to the survival of that organisation.

In the perception of Pfeffer and Salancik (1978), and Aldrich (1976) scarcity of resources directs organisations to engage in inter-organisational relationships. Some companies are struggling to acquire and have direct access to the necessary resources (such as technology, bargaining power, marketing and information systems) for the success of their business. The growing need of companies to adopt integrative and collaborative strategies is given to their needs and to achieve their goals, and thus sustain and leverage their business.

3 Method

In this work, we carried out a qualitative study through semi-structured interviews. The interviewees were owners of companies who are in inter-organisational networks. Interviews were conducted with 20 owners from ten different horizontal networks that were intentionally selected.

Considering the perspective of network evolution explored in this article, the choice of networks studied was based on phases of network evolution, which were defined in this work as follows: formation phase, development phase, and professionalisation phase. To define, distinguish and classify the networks in each of these phases, we observed the variables described in Table 1.

Table 1 Key aspects used to analyse the phases of evolution of networks

Variables	*NETWORK EVOLUTION PHASES*			*Reference authors*
	Formation	*Development*	*Professionalisation*	
Mode of governance	Shared governance	Group of leading companies with the support of an administrative entity	Network Administrative Organisation (NAO)	Provan and Kenis (2008), Popp et al. (2014).
Leadership	Focused on member companies in general	Divided between the leading companies and the administrative entity	Focused on NAO	Dwyer et al. (1987), Silvia and McGuire (2010).
Decision-making process	Decentralised among the members	Relatively centralised	Centralised and Hierarchical	Albers (2010), Popp et al. (2014).
Management of activities	Sustained in social mechanisms	Focused on the leading companies and the administrative entity	Focused on NAO	Provan and Kenis (2008), Wegner and Padula (2010).
Structure of relations	Incipient and dispersed – there are initial strong and weak ties	Definition of strong and weak ties by establishing trust relationships	Maintaining strong and weak ties and informal relations	Granovetter (1983), Provan and Lemaire (2012).

Source: Elaborated by the authors

Thus, before conducting interviews with the owners of companies belonging to the networks studied, these networks were classified in these respective phases. In order to do so, searches were performed on the sites of the networks themselves so as to have a sense of what stage of evolution the network was in, and to avoid the selection of ten networks that were all in the same phase. Afterwards, a meeting was established with each network president to question them about the variables shown in Table 1. A short interview protocol was used to question each network president, and thus certify which phase of evolution the network was in.

After completing this stage of the research, the ten networks studied ended up, by their characteristics, being divided as follows: three networks in the Formation phase, four networks in the Development phase and three networks in the professionalisation phase. Once we interviewed two business owners in each of these networks, a total of six, eight and six entrepreneurs were interviewed respectively in each of the aforementioned phases. Each interview duration was around 45 minutes.

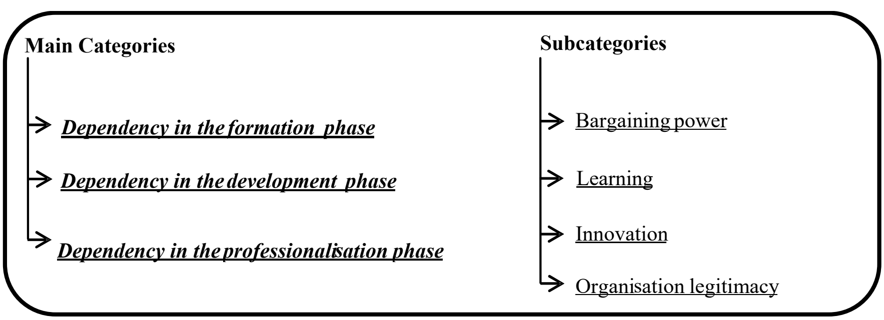
The interview protocol used in the interviews with businessmen had, as main points, the dependency factors explored in the theoretical framework, that are: increase of bargaining power, learning, innovation, specialisation of networking activities, and increase of organisational legitimacy (as shown in Figure 1). This protocol was submitted to an internal validation obtained through the evaluation of the instrument by two specialists in the subject. Afterwards, the external validation was also performed through an interview with a member of a network studied.

For the analysis of the respondents' speeches, the identification of them was done through codes in order to maintain their anonymity. In this way, the business owners were identified as 'Int'. In order to differentiate the evolution phases which each one of the networks was in, the code 'F' was added when the network was in the Formation phase, 'D' for the Development phase and 'P' for the Professionalisation phase. Finally, the members have identifiers from 1 to 8. In this way, for example, 'Int P 6' indicates the answers or affirmations obtained from member 6 of a network that was in the Professionalisation phase.

The technique used in the analysis of the results was content analysis. This technique, according to Moraes (1999), is used to describe and interpret the content of all kinds of documents, texts, and interviews. According to Bardin (2010), this technique can be considered as a set of analysis techniques that, through systematic procedures and objective description of the interviewees' reports, seeks to describe the content of the messages. Furthermore, we followed Godoy (2006) that suggested classifying the evidence obtained in the research field according to previously established concepts or categories.

In this sense, a plan of categories and subcategories of analysis defined a priori was elaborated, which is specified in Figure 2. The definition of these categories and subcategories and the categorisation of the data allows to verify the associations and denotations between sections of texts that facilitates the analysis of the data (Moares, 1999).

Figure 2 Categories and subcategories of analysis



Source: Elaborated by the authors

So, the analysis was made following Figure 2 that oriented and facilitated the data organisation, codification and analysis. This categorisation enabled to verify in a more objective way the dependency relationship of companies to the network they join, as well as to compare the empirical data obtained in the field research with the theory about inter-organisational networks.

4 Analysis and discussion of results

In this section, we analysed and discussed the dependency factors of companies in relation to the networks they are in. In each subsection, we analysed the dependency factors following the different phases of the networks' evolution that were proposed: formation, development, and professionalisation.

4.1 Dependency analysis in the formation phase

Regarding dependency factors, the first factor interviewees were questioned onwas bargaining power. When questioned, interviewees of companies present in the formation phase spoke very positively about bargaining power. Next, we highlight one of the excerpts from the interviewees about the factor, which represents their opinion.

> "As we are small companies, we can't afford to buy a large quantity on our own. So when we see that we have a material that we use a lot, we buy together. Other than that, when we buy less material, than we buy independently, out of the network. So we do get more bargaining power, but we're not dependent on the network because of that"(Int F 3 ').

By the response of this interviewee, we can verify that the members of the network can obtain benefits with the bargaining power obtained by purchasing jointly. However, entrepreneurs are not dependent on the network in which they exist because of this factor. This is something that creates more competitiveness for them, but not to the point of generating a dependency on the network at this stage. Interviewees emphasised that despite this factor generating a differential for them, the company and their business would not end if they could no longer receive that benefit because of a possible termination of the network.

Regarding the learning and sharing of information among network members, networking studies like those cited in the theoretical background have demonstrated that they can create an environment in which members exchange experiences, work practices and management, knowledge, and information in general. This mayaggregate the business of these companies, and also generate a joint learning space that increases competitive advantages to these members.

For members of the networks studied at that stage, information exchange and learning were cited in different ways, but nothing was mentioned in the sense of establishing a dependency link between these companies and the network. The excerpt from the report of Int F1 sums up the opinion of the others on this factor.

> "I consider it beneficial to be in the network because of the exchange of information that exists between us. So, all the time you are exchanging information from some company, with which you work, with which the other works, and this adds to us" (Int F 1).

By the response of this member, it can be verified that the entrepreneurs execute the exchange of information and have a positive perception of learning. They talk about routine work issues, the performance of services and activities, purchase conditions and the launch of new products, as well as other benefits that the information exchange provides them. However, none of the interviewees mentioned that this is an essential competitive differential for their organisations and that this makes them dependent on network cooperation. This may be associated with what Schulz and Geithner (2010) explain – that network learning depends on a few key factors, including network composition, the number of participants and the sufficiency of resources at the operational level to be able to develop new forms of learning. In general, certain elements are necessary for a network member to obtain real competitive advantages through learning from the network and to be thus dependent.

Linked to this factor is the specialisation of the activities and innovations provided by networks. Among the members interviewed in this phase of the study, four of them did not know how to answer this topic. They just mentioned that the network does not innovate yet and does not generate specialised actions or activities in the businesses of its companies. The others answered this question in a varied way, and also demonstrated in their speeches that the network does not provide competitive differentials for the innovation or specialisation of activities. This shows that these networks at the formation stage of evolution are not structured enough to generate competitive differentials for their members in terms of innovation. During this initial phase, networks are usually more focused on meeting the basic needs of their members.

Finally, we verified the question of organisational legitimacy acquired by the companies through the network. The key issue investigated by this factor is to verify how well companies are 'better seen' in the market and improve their image and prestige to customers, suppliers, investors and other stakeholders. Entrepreneurs interviewed mentioned certain elements that may be the initial step in building this legitimacy. However, none mentioned anything that referred to a company's dependence on the network.

> "Well, this image of being in a network is very good, but not that someone would close the doors for not having this image on the facade of the company. You can see that we put the name of the network in the corner of the facade, to get this image." (Int F 2).

This and the other reports showed some actions that guide companies in search for organisational legitimacy, such as standardisation of activities, change of facades or signs indicating the company with the name of the network, improvement in customer service, etc. These are practices that, in the long term, as the network will be better structured, can become recognised by stakeholders and lead to organisational legitimacy. The fact that organisational legitimacy is built along the evolution of the network, in itself, already explains why networks in the formation phase do not have this resource.

These results obtained in the formation phase of networks' evolution were already expected since the member companies acted individually in the market before joining the network. The structure and manner of these companies conducting their activities have not changed significantly due to their entry into the network. The benefits obtained by joining the network generate a competitive differential to these companies, but not to the point of generating dependency.

4.2 Dependency analysis in the development phase

During this phase, we verified that gauging gains through bargaining power was mainly due to the increase in the number of members in the networks. This factor was emphasised by the members of two of the commercial networks studied. In other networks, the possibility of them working together to obtain better negotiation and prices with their suppliers was not discarded, but it was not emphasised. In general, respondents report that this joint buying practice is carried out when there is a need or possibility for this.

> "The purchases, yes, these we managed to carry out together. We buy equipment, maintenance tools; we still buy, for example, packaging stuff, which is a very high volume used by our companies and a very expensive thing. [...] For you to have an idea, ten years ago, these rollers that I told you cost 215 real each. In the network, it was 175 each. Ten years later, only now that we buy for 215 real. In general, it was so. The difference is 30 to 35% of all our joint purchases." (Int D 5)

Based on reports such as this one, we could see that the execution of purchases together is practiced by the members of these networks studied. The possibility for members of these networks to jointly purchase equipment, tools, courses and raw materials, gives them an opportunity to negotiate prices, terms and forms of payment with suppliers. In this way, bargaining power gives these members a benefit they would not have if they were not in the network. In addition, they are able to achieve conditions similar to those of large companies in the industry in which they operate, which stand out by the deliberate use of market control. However, none declared themselves to be totally dependent on the network for obtaining this differential.

On the other hand, one of the factors highlighted by the members of the networks studied in this development phase was in relation to the exchange of information and learning. The members interviewed highlighted learning aspects and actions such as access to new work methods, styles, and ways to manage their businesses, as well as problems solutions, and information for the development and improvement of their business. They cite learning as a key benefit they have obtained in the network.

> "This is an issue that I see strongly in the network, because being with selected professionals generates a lot of knowledge. So this is the biggest achievement we have, and if I have the pleasure of being on the net, it is in that sense. If I have a doubt or do not know something, then the staff know how to give you information on how to do it. The content, the exchange of information, this is essential for me." (Int D 2)

It is noticed in this speech that the exchange of information between the members generates learning, as well as information exchange, that would hardly get outside the network. Or, as one of the members said: "we would achieve the information, but with much more difficulty and with a much longer time interval" (Int D1). The solution of the individual problems of the members is also facilitated by this action of information exchange and learning, which makes the member feel involved in the network and also participate in solving the possible problems of other members.

At the same time, we addressed the issue of innovation and specialisation of network activities. Not only aspects of technological innovation were discussed, but any change or improvement in the organisation at all, such as new management forms, new activities, different and better ways of providing a service that was previously unknown, etc.

When asked about this question, some members interviewed reported that some improvements and activities were developed to generate innovations, such as those mentioned. One of them mentions: "We had, last year, an innovation that I found fantastic in our online system. But of course, brokers have to feed him, otherwise, he's no use" (Int D 8). Another businessman talked about training courses. He says: "For example, we have a member of the network, that he is an authorised assistant of Bosch and he is able to give ultmeter course, about the electrical part, to our employees" (Int D 6).

However, we observed that only a few interviewees spoke of situations that could be classified as innovations. Finally, what can be perceived with the reports of these interviewees and the lack of opinion of the others, is that the actions of innovation specialisation of activities in the networks in this phase are still restricted and do not generate their dependence on the network.

Finally, in relation to the organisational legitimacy, some interviewees even pointed out some actions carried out by the network in this sense. However, these seem to be still incipient in really providing organisational legitimacy to the companies. Interviewee Int D2's response shows this.

> "Well, in terms of market positioning, the network has its own site where all the companies are. Then what happens, companies enter the site and see everyone who participates, and from there, contacts begin to establish themselves. So, in terms of a showcase for the market, the network was a very good thing for us, it put everyone on an equal footing. That was a very good thing" (Int D 2)

What can be noticed from this report are initiatives of the network to try to make itself recognised in the market in which it operates. Some aspects that networks have sought to provide its members could be identified, as a standard of performance, identity, recognition, brand, and image. The idea passed by interviewees is that the network generates credibility in the market, either in the form of representation of the members, in a pattern of work or of the image. This set of aspects above makes the clients and other stakeholders associate the network to a positive image, generating a certain level of organisational legitimacy for the members.

In a general analysis, we can say that the networks studied in the development phase really provide and generate some competitive advantages to their members in regards to bargaining power, learning, innovation and organisational legitimacy. Nevertheless, these factors are not developed enough to establish a relationship of dependence of the companies with the network.

4.3 Analysis of dependency in the professionalisation phase

In this part of the article, we present the results of the interviews to members of the networks in the professionalisation phase. During this phase, we could verify that exist a dependence of the companies in relation to the networks to which they belong. In general, the interviewees' reports in relation to each aspect investigated show that the benefits acquired by network members are essential for them to remain active in the market. The resources provided by networks to their members allow their competitiveness in regards to the large companies in the industry in which they operate. This would not be possible if network members worked individually in the market.

When questioned about the bargaining power, respondents were very emphatic in mentioning joint purchases, which involve larger product volumes and facilitating negotiations with suppliers. In addition, they also talked about the bargain of marketing costs. These negotiations have repercussions on better purchasing conditions, especially with lower prices, better forms of payment, and deadlines. The report of one of the interviewees summarises the opinion of all.

> "The economic issue is essential, because you imagine more than 700 stores, all buying together, negotiating with a supplier. You have a much greater bargaining power than if you are independent and working alone. [...] A

> dependency that I have today from the network is for the purchase, because I would buy much worse alone. I would have less visibility for the trading partner because, today, I have visibility because I am a member of the network. So, this is a dependency I see today that I have" (Int P 1).

In this report, we can verify the dependence of the interviewee in relation to the network in which his company was inserted. This is largely due to the fact that well-structured and organised networks obtain better conditions to purchase goods because of the quantity and volume of goods purchased. Verschoore and Balestrin (2008) mention that bargaining power is defined by the gains obtained as a result of the growth of the quantity of network members, that is, the larger the number of companies, the greater the network's capacity to see market power gains.

The other factor studied, inter-organisational learning, was also strongly emphasised by the members of the networks studied in this phase. Here, however, learning is not only the result of interaction and meetings between members. The networks themselves work to generate learning opportunities for their members by hiring lecturers, providing courses, and consulting services in the business area that the members work in. The network becomes an instigator of learning by the actions it promotes.

> "The network also provides several courses for us. It is both face-to-face courses and online courses that it provides us and for ours pharmacists, attendants, etc. [...] In that sense, the network is looking out for us. And then, if you are out of a network, you would have to look for this. Something that you have no time for, or that you do not even see, or goes unnoticed in your store, but the network is there, pointing it out to you" (Int P 1).

> "We are going to take courses in taxation, legislation, and inspection. Three things that impact our business. [...] There are things for our clerks too, which they call "7 steps of the sale." (Int P 5).

The reports show that the question of the learning provided by the network is a factor that generates competitiveness for members. This learning generates quicker and easier access to information, as well as making the member company and its employees aware of techniques and management regulations that are essential for the better conduct of business. The issues of taxation, legislation, and enforcement exposed by the interviewee 'IntP5' are examples of that. Members of networks in the professionalisation phase would hardly have the same facility to obtain this know-how if they were not joining the network.

The question of companies' dependence on the learning provided by the network is visible at this stage of the networks' evolution. The point to note is that they have access to many questions, procedures, and pieces of information that are essential to their competitiveness and that they would hardly have access to if outside the network.

Parallel to the question about learning in the network, the interviewed members were also questioned about how much the innovation and specialisation of network activities made them dependent on it. The reports about this factor show a relationship of dependence of the companies to the network. One of these reports is set out below.

> "The network has a very well-assembled central warehouse. [...] You have a buyer, you have a goods separator, you have the staff that carries merchandise and you have a very good system. It has a payment term, the validity, the type of delivery, if it will be delivered to the store or the warehouse.[...] It's something that the network provided me, and I do not see how to work without it." (Int P 2)

With the interviews, we could verify that networks studied at the development stage provide their members with different and innovative activities that solidify the relationship of the dependence of member companies. There are several issues that are involved in this relationship, such as the programming and implementation of an information system, the construction of a central warehouse for receiving and organising purchases, and the development of a brand and new products. There were many innovations mentioned by the interviewees which became mechanisms for sustaining their companies in the market.

All these elements discussed hitherto have repercussions on the creation of organisational legitimacy for the network and its members. This legitimacy, as defined in the theoretical background, is a situation in which companies, or a certain group of companies, obtain recognition from their stakeholders as to their actions and ways of acting, cultural alignment and consonance with norms and laws. About this subject, one excerpts summarises all members' opinion.

> "By comparing what I was and what I am today, I can say that the growth and visibility that we are having today is infinitely greater than a few years ago. We create an affinity with each region and we begin to understand what the customer needs and likes to buy, which goods cannot be lacking. [...] This is just something that network has provided to us. It improves the mix and it is better for you to buy." (Int P 7)

The above report shows that companies' legitimacy was improved by network activities and performance. This legitimacy was conquered by the network not only to the clients of the individual companies, but also to its suppliers. There are several elements involved in creating this legitimacy, from the application of more intense publicity vehicles and strengthening of network image, to the availability of products that meet the needs of consumers. In addition, networks have created and maintained their credibility with suppliers without delay in the payments.

These are just some elements that construct a positive image regarding the network in front of its main stakeholders. This, consequently, is passed on to its members, who strengthen their businesses and therefore network legitimacy ends up becoming essential for them. Lin (2012) points out that legitimacy increases the chances of acquiring the resources needed for growth and survival, such as capital, innovations, management forms, customers, and networks of contact. Thus, a good part of resources they obtain through the participation of the network are responsible for this. This is what makes them dependent.

5 Discussion of results

Analysing the factors studied as generators of the dependence of the companies, we verified that these are not developed and organised in the networks in the Formation phase to the point of generating the dependence of the member companies. These networks, as highlighted in the analysis of the results, need some time to structure their actions and organise their activities and governance system.

Comparatively, network companies in the professionalisation phase were in a different situation. These were dependent on the network in which they were inserted due to the effectiveness of the network in generating the factors studied in this article and so making them competitive in the market in which they acted. In theory, given that organisations transact with each other to obtain the resources they need, the one who has control over these resources becomes a key player in the relationship, as it provides them with power over the other organisation, which becomes dependent (Pfeffer and Salancik, 1978). In other words, one organisation can be influenced by another (in this case, the network) that holds substantial or exclusive control over critical resources to the survival of the said organisation. As an independent administrator of deliberate activities and actions, the network has become the strategic mechanism for the survival of member companies, coordinating the resources they need.

This explains why dependence can be understood as the measure of power that one party has over another in relation to a given resource. As Emerson (1962) explained, the dependence of an actor A on an actor B, provides the basis for the power of B on A, because B is in control or influences the goods, services, or other resources that A wants. Thus, the empirical research performed in this article showed that the practice corroborated the theory. Companies, when entering the network, only seek opportunities to improve their business through the benefits generated by the network. However, when the network begins to improve its organisation and management structure and starts to generate unique strategic resources to the member companies, these become more and more dependent on the network in which they are inserted. In general, the resources they need are not found outside the network.

The information and results of this article also bring relevant theoretical and practical findings. Theoretically, the work allows for advances in the academic discussions about TDR. One of the main questions addressed by TDR is "Why do companies constitute or join inter-organisational relations or arrangements?" Two of the leading scholars of this theory claim that organisations are constrained and affected by their environment and act to try to control their dependencies through the creation of different forms of inter-organisational arrangements (Pfeffer and Salancik, 1978).

In this sense, what we have verified is that once inserted in a network, the companies will have to manage their dependence with the network, as explained in this empirical work. Yet, indirectly, they are simultaneously also managing their dependence on the environment, since, inevitably, member companies will have to manage their dependence on the environment again if they decide to leave the network in which they were inserted. Therefore, to a greater or lesser degree (depending on the evolution phase of the network), companies will have to manage their dependence on the network in which they are inserted, since it manages the resources they need, and these are demanded by the environment in which they are inserted. In other words, organisations will enter into a collaborative relationship with other organisations in response to the challenges posed by interdependencies that shape their common environment (Aldrich, 1976). So we may conclude that the environment dictates the dependence of the companies with the network.

Another important theoretical finding of this article is that the dependence of the companies explains the survival of the networks. Theoretical evidence demonstrates that mutual dependence is a necessary condition for the formation of the alliance, but the imbalance of power (or asymmetric dependence) that, on the one hand, can be an obstacle to the formation of an inter-organisational relation, can yet become a real situation of relationships (Casciaro and Piskorski, 2005). In this study, this is what happens in the professionalisation phase of networks, when there is an imbalance of power on the part of the network, which provides the resources that companies need. Therefore, companies' dependence on a network can be understood as a way for the company to meet its resource needs and achieve its objectives (Frazier, 1983) and indirectly serves as a driving force for network survival.

In this way, this work also contributes to the fact that dependence decreases the autonomy of the companies' integrating networks. While a company needs one or more resources provided by the network for its survival, it will lose at least part of its autonomy in its managerial actions. This company has to adapt its individual management, decision-making process and actions to align with what is stipulated by the network. Guo and Acar (2005) explain that in the scarcity of resources, organisations, especially smaller ones, may be more inclined to give up their autonomy and develop formal types of collaborative activities in order to obtain easier access to the critical resources they need.

In this context, Gray and Wood (1991) explain that a fundamental challenge for an individual organisation in choosing between different forms of collaboration is to maintain the dynamic balance between the management of needed resources and the sustainability of its organisational autonomy.

In the practical field, we conclude that dependence should not be understood as bad. Although companies seek strategies to avoid being controlled and losing their autonomy, dependence on resources generated by a network should not be understood as damaging to the member organisation. If the network is the way in which the company obtains the critical resources for its survival and generates profit for its business, this fact becomes a reason for companies to commit themselves and collaborate even more for the success of the actions undertaken by the network. For Gardet and Mothe (2012) dependence arises from the company's need to maintain a collaborative relationship in order to achieve its objectives. Thus, once the network is effective in providing the reach of these organisational objectives and providing a range of resources to reduce companies' environment uncertainty, it becomes an effective vehicle for the competitiveness of its member companies. Therefore, these companies should work together to keep the network alive.

Finally, another practical contribution of this article is that a network needs to be managed, like any other organisation, over time. Once a network is defined as an organisation independent of its member companies, it needs to be managed like one. However, at the beginning of the cooperative activities, there is no clear distinction between the group of companies and the network. This, therefore, necessitates processes of management, organisation, formalisation, and control as well as another individual organisation.

We verified that the more advanced the networks phase of evolution, the more it uses processes and practices of management. Due to this, it generates a range of resources that its member companies need. So, administrative functions of planning, organising, directing and controlling must be applied and used in cooperative organisations, like networks, as much as they are used in another organisation of the market.

6 Conclusions

The objective of this empirical study, based on the research problem, focused on making possible a greater understanding of dependency factors of companies with the networks in which they participate. At the end of the analysis and discussion of the results, we verified that the dependency relation between member companies and networks changes according to the evolution phase of the network. In the initial phase of Network Formation, the companies are not dependent on the network, because they were working independently before the formation of the network. However, as the network evolves and is structured and starts offering competitive differentials to member companies, they become network-dependent. We also verified that this dependence is generated by a set of factors and not by isolated factors or benefits.

From this main result, the work accomplished allowed us to obtain some insights and discussions about the theory and the management of the networks, resulting in the following main theoretical contributions:

1 the environment dictates the dependence of the companies with the network

2 dependence on companies explains the survival of networks

3 dependence reduces the autonomy of member companies.

Allied to this, we advance in the practical field of study of inter-organisational relations with the following practical contributions:

1 the network needs, over time, to be understood and managed like any other organisation

2 the dependency may not be understood as something that is bad for network member companies.

It is important to emphasise that this work has some limitations in its results. Due to the fact that no information was collected with more members of the networks surveyed, different observations and information may be not collected. Quantitative research on the subject of this study may be pertinent in this sense. Another limitation is related to the determination of companies' dependency factors. Although the interviewees did not mention other variables (or factors) related to the subject of this study, these do not end with this research. Other variables and factors can be identified in other environments to enrich the theoretical body on this subject.

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