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Interorganisational social capital and innovation: a multiple case study in wine producers networks in Serra Gaúcha

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Abstract

The social capital issue is related, in the organisational context, to the creation of competitive advantages for companies, starting with the assumption that economic variables are not adequate for social development and building a sustainable environment. In addition, the social capital has become a competitive resource, since it can enhance the individual and collective capacity based on collaborative practices. Also, it may become a source of improvement or maintenance of the competitiveness in member organisations in networks. At the same time, the significance of the innovation process for organisational competitiveness is a well known fact, while the same does not occur independently and is influenced by several factors. In this sense, this study is aimed primarily at checking whether the social capital and competitiveness factors have an impact on the innovation of companies linked to networks. Therefore, making use of self-administered questionnaires as data-collection technique, a descriptive and quantitative study was conducted. To analyse the results, analysis of variance and linear regression were used. The main results illustrate the differences between sources of information for innovation in these networks. In addition, the study results confirm that social capital has influence on the dimensions for the improvement of competitiveness and these dimensions, in turn, influence some types of innovation.

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Keywords: Social capital; Competitiveness; Innovation; Cooperation networks

1. Introduction

In the last two decades, the business collaboration has represented an outlet for businesses making important earnings in terms of competitiveness and increased innovation levels. Increasingly, organisations adjust within a mesh connections with other agents, building collaborative networks (Verschoore & Balestrin, 2006). The collaboration presents itself as a result booster and the networks seem to make easy the access to information, resources and capabilities. However, it is known that

although the collaborative networks play an important role in the results of companies that participate in this kind of organisational arrangement, yet these results are not unanimous and not of the same intensity in all situations. In addition, the difference of the results can be precisely in terms of the social capital stock on the network.

In this context, social capital is characterised as the attributions of an organisation such as trust, norms and networks, which facilitates coordinated actions and improves the efficiency of society (Coleman, 1990). The social capital can be linked to some relationships that companies maintain in order to create competitive advantages not only on the basis of its own competencies, but also on the skills of other organisations or institutions located in the same cluster (Marti, 2004). According to the seminal study of Onyx and Bullen (2000), social capital has a fundamental role in the conversion of the collaboration in productive force.

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Given this need to understand the origin of the differentiation of the organisational performance when all entities have access to the same types of resources, Putnam (2002) conducted a search and ended up valuing, above all, the civic culture, the civility, the political culture and the republican traditions of society, namely important factors for the existence of social capital. According to Callois and Aubert (2007), this is a persuasive idea for three reasons: (i) social capital implies to many social ties that can transfer information (Coleman, 1988; Haezwindt, 2003), and the relevant information are often expensive. Soon, those who have greater accessibility will have decisive advantages; (ii) the prevalence of trust and loyalty allows reduction of transaction costs (Fukuyama, 1996; Haezwindt, 2003; Morgan, 2000; Skidmore, 2001); and (iii) the social relationships facilitate collective action and may involve the production of public goods that enable to increase production and innovation (Morgan, 2000; Skidmore, 2001).

From the mentioned aspects, it becomes relevant to accomplish studies about the demonstrations of social capital, competitiveness and innovation. As a basis in this context, the following research question has guided the development of the study: what is the impact of the social capital and the factors of competitiveness on innovation of companies that participate in networks? Therefore, this research is aimed at verifying whether the social capital and the factors for competitiveness have impact on innovation of companies linked to networks. To resolve this problem of research, offering an important theoretical contribution to the field of interorganisational studies, two wine producers networks namely “the Aprovale and the Aprobelo” were selected as objects of study. These networks have excelled in the national context in wine by the results earned and by increasing the competitiveness of companies. For this reason, they are presented as objects of significant study that will make possible an important theoretical contribution.

The relevance of this study is based on the premise that economic variables are not adequate to explain the economic development and even the construction of a sustainable, competitive and innovative environment for micro and small businesses. So, the understanding of the implications of the social capital in this scenario became important, considering the representativeness of this economic sector to the Serra Gaúcha region.

In the forthcoming sessions, the theoretical review on the central themes of research, as well as methodological aspects will be presented as well as the main results will be highlighted.

2. Social capital

The popularity of concepts and approaches linked to social capital is demonstrated in several areas of study, such as economics, sociology, business administration and political science. According to Albagli and Maciel (2002), the dissemination of the concept and the expansion of research on the subject occurred in an accelerated way due to some situations, such as: (i) the valuation of relationships and social structures; (ii) the recognition of resources embedded in structures and social networks, not accounted for by other way of capital; (iii) the change in the political-economic environment with the

repositioning of the roles of the state and society, and relations between public and private; (iv) the need to develop concepts, which reflect the complexity and interrelationship of the various spheres of human intervention; and (v) the potential political leverage of the social capital.

Although the literature on social capital cannot be classified into “pure” categories, yet various meanings associated to the concept, both as an asset or as a set of social relations, can assist in your understanding (Rodrigues & Child, 2012). At the same time, analysing the theoretical lines concerned with the topic, it is possible to identify two strands: (i) social capital as something accumulated by a particular individual (Lin, 2001; Portes, 1998; Silva, 2006); (ii) the construct is analysed as an element belonging to a group, community or society (Helal, Neves, & Fernandes, 2007; Macke, Sarate, & Vallejos, 2010).

It is worth mentioning that regardless of the theoretical strand studied, there are common elements present in the polls linked to the theme, such as the trust (Santos & Rocha, 2011) and cooperation. In this way, it is possible to infer that all societies have some level of social capital and the differences would be related to issues, like trust and cooperation (Fukuyama, 2000). Converging with this idea, Putnam (2002) discussed the trust as a basic component of social capital, as an element that promotes cooperation.

Other relevant factor related to the researches about the social capital is the relationship with the organisational context. According to recent studies, we can highlight the following themes: social capital and organisational performance (Akdere & Roberts, 2008), social capital and organisational networks (Anand, Glick, & Manz, 2002; Genari, Macke, & Faccin, 2012; Sequeira & Rasheed, 2006), social capital and competitive advantages (Arregle, Hitt, Sirmon, & Very, 2007), social capital and organisational commitment (Macke, Genari, & Faccin, 2012; Watson & Papamarcos, 2002), social capital and innovation (Faccin, Genari, & Macke, 2010; Ximenes, 2008) and social capital and entrepreneurship (Willers, Lima, & Staduto, 2008).

Although there are many studies on the topic, yet there is no harmony or consensus on the concept of social capital and how to measure it. This statement is reinforced by taking into account the fact that the broader definitions of social capital are multidimensional, incorporating several levels and units of analysis. Therefore, there is an ambiguity, when we try to analyse the theme and its properties in the context of communities, networks or organisations (World Bank, 2014).

To facilitate the understanding and the theme analysis, Nahapiet and Ghoshal (1998) presented attributes associated to the social capital, as these characteristics can be subdivide into three distinct dimensions. Although they are discussed analytically in a separated way, yet they have great connection. Corroborating with this idea, Vallejos, Macke, Olea, and Toss (2008) performed the analysis of articles on social capital, extracted from the data base, namely “Business Premier Database”. The authors identified elements corresponding to the dimensions of social capital at organisational level, intragroup (relationships within the network) and intergroup (relationships between networks). Table 1 presents the dimensions of social capital proposed by the authors and their respective elements.

Table 1
Dimensions of social capital, characteristics and its elements.

Dimension	Features Nahapiet and Ghoshal (1998)	Elements Vallejos et al. (2008)
Structural	Connection pattern between actors, which includes network settings and connections in terms of density, connectivity and organisational hierarchy.	Ties Stability Density Setting Connectivity
Relational	Assets that are created and leveraged through relationship, including attributes such as identification, trust, rules, penalties, obligations and expectations.	Trust Norms of reciprocity Participation Obligations Diversity tolerance
Cognitive	Resources that represent shared visions, interpretations and meanings systems, such as language, codes and narratives.	Values Shared narratives Shared language Culture Codes

Source: Adapted from Nahapiet and Ghoshal (1998) and Vallejos et al. (2008).

Talking about the relationship between the aforementioned dimensions, Nahapiet and Ghoshal (1998) stated that all the prospects are not mutually reinforced, but the structural dimension of social capital influences the development of relational and cognitive dimension.

3. Social capital as a strategic resource for the promotion of collaborative innovation and competitiveness

The growth of research on networks, especially from the late 1980, is related to the change from an individualist vision to a more relational, contextual and systemic view (Borgatti & Foster, 2003; Zaheer, Gozubuyuk, & Milanov, 2010). In the organisational area, the network is understood as a forma of organisation of economic activities through the coordination and cooperation between the companies (Balestrin & Verschoore, 2008; Provan & Kenis, 2008).

The theoretical approach of the social capital points out that the network organisation provides access to external resources and capabilities. It is observed that the most reported resource, obtained in this form of organisation, is related to information. According to Balestrin and Verschoore (2008), the purpose of establishing interorganisational relationships, as networks, is gathering attributes that allow an organisation to better adapt to the competitive environment, with opportunities for positive results and economies of scale without loss of flexibility.

Beside the possibility of providing more competitive conditions for existing products, the network can also be an important repository of ideas for creating new products, processes, management tools or even market performance. In this context, the network becomes an important space for the promotion of organisational innovation.

Rothwell (1995) stated that innovation is influenced significantly by the formation of networks and alliances, leading to

a variety of external relationships. The author calls this pattern a “fifth generation pattern”, marked by integration systems and networking. In this sense, the studies concerning the collaborative innovation stand out in the context of interorganisational networks (Chen, Chang, & Hung, 2008; Dakhli & Clercq, 2004; Tsai & Ghoshal, 1998; Zheng, 2010). This stream believes that the direct relationships between the actors of a network affect positively the result of innovation.

According to the aforementioned placements, you can see elements of social capital linked to themes of cooperation and innovation networks. The research on social capital in organisations have been increasing in recent years, focusing on several areas: employability and professional development, exchange of resources and promoting innovation, creation of intellectual capital, team development, reduction of turnover rates in organisations, organisational learning, etc. (Adler & Kwon, 2002). So, you can check the relationship of the theme with the internal and external environment of organisations.

The social capital, discussed in the external environment, can be linked, according to Marti (2004), to some relationships that companies maintain in order to create competitive advantages not only on the basis of its own competences, but also in other organisations or institutions skills located in the same cluster. In a simplified form, the author claims that the social capital is considered the outcome of resources and capacities that belong to a network of organisations, in which companies have the goal to compete successfully.

Reinforcing this idea, Balestrin and Verschoore (2008, p. 124) stated that the development of complex collaborative actions between companies becomes possible through social capital, since “the formation of a network will be influenced by the degree to which people in a business community share standards and values and are able to subordinate the individual to collective interests”. For these authors, the results of innovation tend to be based on a subset of publicly available knowledge, which is shared and improved consequent to user experiences and scientific research. Thus, the transfer of technical and scientific knowledge, necessary for innovation, is complex and interactive.

In this context, we highlight here some studies that connect the social capital with the networks and innovation studies, providing different approaches to this link. Social interactions allow people to learn how to share important information with each other, create a common understanding related to tasks or goals, as well as obtain other resources and ideas (Chen et al., 2008), generate innovation. The generation and application of new ideas is therefore promoted by social interaction. In other words, the generation and application of new ideas is promoted by social capital.

Furthermore, Xu (2011) argued that the innovation process is benefited by the engagement between partners, which provides opportunities of information integration, knowledge bases integration, behaviours and different ways of thinking. In addition, the communication, both formal and informal, among a variety of actors increases the possibilities of new combinations of knowledge.

In the midst of the empirical studies that have examined the constructs of social capital, networks and innovation, is

the research of Chen et al. (2008) that, using a sample of 54 projects in I & D in high technology teams in Taiwan, examined the impact of social capital and creativity originated in project teams. The results of factor analysis revealed that the social interaction and the network had significant ties and positive impacts on creativity (ideas) of the teams.

Local and regional innovation systems and differences between international realities are objects of study for understanding the practical implications of the social capital and innovation. Meléndez, Obra, and Lockett (2012), for example, examined the role of social capital on knowledge transfer between educational institutions and small and medium-sized firms located in Spain in regional innovation systems. The study pointed out the importance of informal relationships in the exchange of tacit knowledge. For the understanding of this way of relationship, the authors quoted the social network analysis to improve the understanding of this dynamic.

Still in the field of small and medium-sized enterprises, Huggins and Johnston (2010) discussed that medium-sized firms have a higher likelihood of knowledge exchange with local universities, private sector organisations and professional associations. Among the conclusions, the authors suggested a connection between investment in social capital and innovation in collaborative alliances and the influence of sizes of companies, the location of the actors and the development of networks.

Zheng (2010), in turn, reviewed existing empirical studies on the relationship between social capital and innovation to identify consensus, differences and gaps in this relationship. The results suggest that the dimensions of social capital, including network size, structural ties, the ties strength and the centrality, have a significant impact on innovation. Relational components of social capital, such as trust and shared standards, demonstrated a consistently positive relationship with innovation.

In an environment where there is a greater presence of social capital, there is possibility of better exploitation of the development opportunities. Thus, it is claimed that the stability, durability of relationships and the closing of the network are key elements in the search for high levels of trust and cooperation standards. These qualities also influence the clarity and visibility of mutual obligations (Coleman, 1988; Nahapiet & Ghoshal, 1998; Putnam, 2002).

So, the decision to participate in a cooperation agreement is sheathed in a social interaction, and it presents itself as a key element of a mechanism of collaboration, featuring the importance of social capital. Regardless of the duration and objectives of the business, a good partner becomes a major business asset, namely an advantage of collaborative society (Kanter, 1994). Therefore, the success of networks is attributed to the stock of social capital.

4. Methodological procedures

This research is continuation of studies carried out by the authors. First of all, there was a quantitative research, which aimed at validating a questionnaire for measuring social capital and networks competitiveness. For this study, we used the previously analysed data, along with secondary data held by

the group, which featured the types of innovation and agents of this process in the referred networks – APROVALE and APROBELO. The research tool adopted for this study, contemplating the variables linked to social capital, competitiveness and innovation, is presented in Appendix A.

The questionnaire to measure the types of innovation and the agents was used previously by Brata (2009) in a study of networks of small and micro-enterprises of Indonesia. The research of Brata (2009) aimed at estimating the impact of social capital on innovation of micro enterprises, considering six types of innovation: product, service, process, market, logistics and organisational.

So, using the quantitative initial data from the application of the survey and already examined by the factor analyses, which originated from three dimensions of social capital (structural, relational and cognitive), as well as the three factors that assist in improving the competitiveness of networks (organisational assets, exploitation of endogenous resources and networking), it was possible to perform new analyses, such as ANOVA and the linear regression (Hair, Babin, Money, & Samouel, 2005). This process aimed at verifying whether the social capital and the competitiveness factors had influence on the companies' innovation linked to networks.

In order to provide more statistical rigour to the study, the assessment of a possible effect of multicollinearity and developing the tolerance test and VIF (Variance Inflation Factor) with independent variables was carried out. The VIF measures as the variance of the regression coefficients are affected by problems of multicollinearity and have 5.0 as maximum acceptable value. Now, for the tolerance test, the minimum acceptable value is 0.10 (Hair et al., 2005). Through the analysis carried out, the tolerance values were above 0.10 and the values of VIF below 5.0. So, it was possible to keep the models of analysis of regression developed in the study. To assist in the statistical analysis, we used the software SPSS (Statistical Package for Social Sciences) version 18.0. The Fig. 1 summarises the main steps and some methodological features of the study.

The research comes from a multiple case studies (Yin, 2010) and was conducted with the overall elements that call themselves “partners-owners” of the wineries belonging to the Aprovale (Vale dos Vinhedos Wine Producers Association) networks and the Aprobelo (Association of Wine Producers of Monte Belo do Sul), totalling 109 respondents (77 linked to Aprovale and 32 linked to Aprobelo). Therefore, it is a census.

The two networks studied stand out in the context in which they are inserted. The Aprovale, located in the Bento Gonçalves city, national capital of wine, holds the first label of geographical indications and designations of origin in the country (Aprovale, 2014). On the other hand, the Aprobelo, besides the geographical indication label, is situated in Monte Belo do Sul, which is the largest producer of sparkling grape varieties of Latin America (the largest wine-producing town per capita of Brazil) (Aprobelo, 2014; Razador, 2005). Both are inserted in the productive cluster of Serra Gaúcha, which is responsible for 80% of the national production of wines (Fensterseifer, 2007) and is the largest vineyard area of Brazil, with approximately 34,000 acres of vineyards planted (Uvibra, 2006).

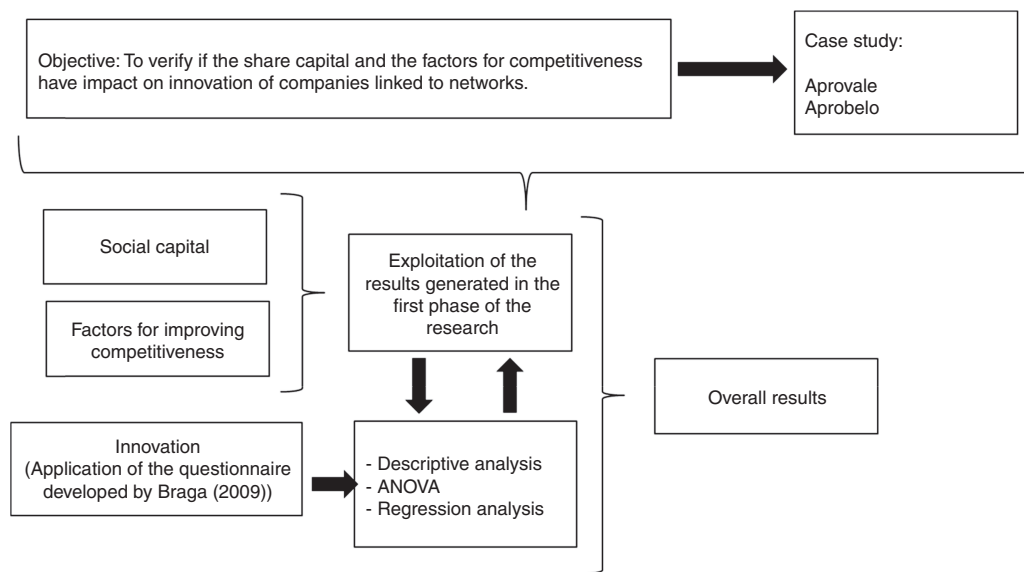


Fig. 1. Main stages and methodological features of the study.

Source: Prepared by authors, from the theoretical review and methodological procedures of the study.

5. Analysis and results discussion

In this section, initially, the main results of the study, reporting, the main sources of information and knowledge regarding organisational innovations will be described and discussed. After that, the social capital impacts and the factors for the competitiveness improvement in innovation will be analysed.

5.1. Main information sources and knowledge regarding organisational innovations

In order to check the manifestations of innovation in enterprises studied, it was studied whether there was some sort of innovation on the part of entrepreneurs. If so, the interviewees were asked to point out which were the main agents who assisted in the innovation process. In this sense, there was the possibility to choose between six different types of innovation (product, service, process, market, logistics and organisational), as each person featured two to four indications about how this innovation could perform.

In addition to pointing out the innovation, the interviewed should also indicate the main source for that particular type of innovation. The questionnaire provided 12 distinct sources of information and knowledge; my own trial, customers, suppliers, family and closest friends, partners and employees, competitors, network partners, events provided through network, partners of other associations, fairs and exhibitions, government institutions, universities and the media. From this information, it was possible to present the distribution of interviewees based on the innovation types, as described in Tables 2 and 3.

Table 2 presents the distribution by the type of innovation in Aprovelo network, where it can be seen that the network partners are pointed out as main agents in the innovation process. According to Balestrin and Verschoore (2008), the networks enable the development of collective strategies of innovation

and provide quick access to new technologies through its information channels. Thus, it is supposed that in a network, there is an intention to access the innovation sources. This point is corroborated by Ahuja (2000), which highlighted that the direct relationships between the actors on a network positively affect the result of innovation, providing three benefits: shared knowledge, complementarities of expertise and scale in research and development projects. In addition, the networked interaction allows access to greater amount of knowledge to the process of innovation.

On the other hand, according to the data held on the Aprovale network (Table 3), it turns out that customers and suppliers seem to be more frequent innovation agents than the network partners. Recent studies have shown similar results. Sometimes, the technological sources are not exclusively within the company, but they're in the middle of competitors, suppliers, customers, research centres and universities. These studies also highlighted that outsourcing is a result of the difficulties involved in the internal governance of new technologies or problems arising from the management of large technological projects. In addition, the difficulty of access to new markets leads to outsourcing these activities (Arranz & Arroyabe, 2008).

Typically, suppliers facilitate in creation of new products that require complex technologies, with a strong impact on the results of innovation (Un, Cuervo-Cazurra, & Asakawa, 2010). Consumers also contribute to reduced risk of failure of a new product in the market (Gassmann & Enkel, 2004) and consist of a major source of new ideas for the research and development process (Poetz & Schreier, 2012).

Thus, it is clear that companies need external relations with other organisations to learn and develop the necessary skills to stand out in their markets and promote innovation (Nooteboom, 2008). In addition, companies, which do not cooperate, formally or informally, in the knowledge exchange, limit their long-term knowledge base.

Table 2
Distribution of interviewees based on the types of innovation and information sources (Aprobelo Network).

Type of innovation	Main source of information/knowledge	% Relative	Number of respondents
<i>Products</i>			
Change in components	Aprobelo partners	58.33	24
Change in <i>design</i>	Family and closest friends	38.10	21
<i>Services</i>			
Change in the way of providing the service	Aprobelo partners	66.67	24
New types of service	Media	36.36	11
<i>Processes</i>			
Improved production processes	Aprobelo partners	40.74	27
New equipment or new technology	Partners and employees	30.77	26
<i>Market</i>			
New targets of marketing	Aprobelo partners	37.93	29
New market segment	Aprobelo partners	68.18	22
<i>Logistics</i>			
New raw materials	Governmental institutions	78.68	19
New sources of raw materials	Aprobelo partners	80.00	20
<i>Organisational</i>			
New manufacturing management system	Partners and employees	29.17	24
Quality control	Aprobelo partners	57.69	26
Simplification of the decision-making process	My own judgement	53.85	13
New forms of human resources training	Aprobelo partners	100.00	12

Source: Elaborated by the authors based on the results of the research.

Analysing the reached results, it is possible to highlight that for the interviewees linked to Aprobelo, the main sources of knowledge for innovation are from their own network partners. In Aprobelo, these sources were customers and suppliers, and especially inside the organisation.

One can deduce that this result is linked to the origin and objectives of creation of this networks. One of the main initial objectives of Aprobelo was obtaining the label of geographical indication for wines produced in the region and to obtain depended mandatorily of the creation of the Association (Aprobelo, 2014). It is worth noting that although the

wine-producers have carried out adjustments and improvements in the productive process, but there was already a proper structure to obtain this certification. Aprobelo, although presented their initial projects for obtaining the label of geographic indication for sparkling wine produced in the region, have some elements that make it different from Aprobelo.

For dealing with smaller wine-producers, companies associated to the Aprobelo, needed to join in structural terms. The establishment of a wastewater treatment plant used by all companies associated to the entity is an example of this need. In addition, the common use of equipment, the adoption of packaging

Table 3
Distribution of interviewees based on the types of innovation and information sources (Aprobelo Network).

Type of innovation	Main source of information/knowledge	% Relative	Number of respondents
<i>Products</i>			
Change in components	Customers	45.24	42
Change in <i>design</i>	My own judgement/Customers	27.27	55
<i>Services</i>			
Change in the way of providing the service	My own judgement	33.33	57
New types of service	My own judgement	30.00	40
<i>Processes</i>			
Improved production processes	My own judgement/Partners and employees	29.82	57
New equipment or new technology	My own judgement/Suppliers	22.22	54
<i>Market</i>			
New targets of marketing	Fairs and exhibitions	23.08	65
New market segment	Customers	39.13	46
<i>Logistics</i>			
New raw materials	Suppliers	57.89	38
New sources of raw materials	My own judgement	31.11	45
<i>Organisational</i>			
New manufacturing management system	Partners and employees	39.39	33
Quality control	My own judgement	53.06	49
Simplification of the decision-making process	My own judgement	84.38	32
New forms of human resources training	My own judgement	57.58	33

Source: Elaborated by the authors based on the results of the research.

Table 4
Comparison of the different types of innovation between networks (ANOVA).

Types of innovation	Significance
Product innovation	0.646
Service innovation	0.227
Process innovation	0.392
Market innovation	0.783
Logistics innovation	0.376
Organisational innovation	0.985

Source: Prepared by the authors, based on the research results.

n: 104.

^a $p < 0.05$

and other materials (including the aim of reducing costs) and the project of construction of a headquarters for the association, including a complete structure for the manufacture of wines and sparkling wines in a cooperative system, reinforce this statement.

Due to these characteristics and needs, possibly the elements such as cooperation, reciprocity and participation, which form part of the relationship of the actors of network, are present in the wine-producers associated to Aprobelo. Generally, it seems possible to claim that the network (especially the Aprobelo) has realised the benefits that the innovation process, collaboratively, can give them, although they hold differences in external sources of information and knowledge for different types of innovation.

Following, the analysis of variance (ANOVA) comparing the results related to the types of innovation was done (Table 4). This procedure aimed at verifying statistically whether, arising from the use of different external sources, differences between the averages of the groups of interviewees from Aprovale and Aprobelo networks would be identified.

Based on the results presented in Table 4, it can be stated that there were no statistically significant differences between the two networks, with regards to the types of innovation. This fact seems to indicate that there is no difference between the external sources that contribute to unleash the innovative process. Chesbrough (2003) described this phenomenon, emphasising that organisations seek to use external and internal ideas to develop products, processes and markets. In this sense, companies can use external ideas for developing your own business model and work with a wide network of external collaborators, which, probably, will thrive in this open innovation time. An adequate strategy of open innovation must explore multiple ties with many types of institutions. According to Chesbrough (2003), the open innovation involves an extensive use of interorganisational links to internalise external ideas.

5.2. Impacts of social capital and the factors for the improvement of competitiveness in innovation

After the descriptive analysis and comparison of the surveyed networks, to the study endeavoured to verify the impact of the social capital and the factors related to competitiveness for the different types of innovation. Initially, we present the results of the previous study performed (Table 5), which showed the dimensions and the averages of the social capital and competitiveness in the studied networks.

Table 5
Dimensions of social capital and competitiveness.

Constructs	Dimension	APROBELO (averages)	APROVALE (averages)
Social capital	Relational	40,399	31,446
	Structural	40,972	29,981
	Cognitive	38,710	31,598
Competitiveness	Organisational assets	42,097	30,308
	Endogenous resource utilisation	35,591	30,822
	Networking	39,597	33,938

Source: Prepared by the authors, based on the research results.

From the results shown in Table 5, we see that both the Aprovale and the Aprobelo have high social capital stocks (Onyx and Bullen, 2000). However, in accordance with the practices, the culture, the values and the common goals, each association presents distinct characteristics regarding social capital. The result seems to indicate that the group links are more clear and defined in Aprobelo with regards to the trust, norms of reciprocity, participation and sense of belonging. On the other hand, the goals and the shared experiences are most prominent in the Aprovale network.

With regards to the improvement of competitiveness, three dimensions stand out, contextualised according to the research previously conducted (Wu, 2008): (i) organisational assets: the improvement of competitiveness is linked to the shared creation for the mutual reinforcement of individual capacities and the integration and coordination between the network members; (ii) exploitation of endogenous resources: the improvement of competitiveness is linked to promotion of the tourism potential of the region, with the consequent development of wine tourism and enogastronomy; and (iii) networking: the improvement of competitiveness is linked to informal contacts with members outside the network and contacts established through the network.

In general, from the results, it seems possible to say that the cooperation networks of the cluster of wine-producers have improved their competitiveness on the basis of mutual aid, promotion of community identity and strengthening technical skills for the production of quality wines.

Subsequently, it was examined whether: (i) social capital stocks impacted on the dimensions of innovation of firms linked to networks (Table 6); (ii) social capital stocks influenced the factors for improvement of competitiveness of the organisations (Table 7); and (iii) the factors for the improvement of competitiveness impacted on the innovation dimensions (Table 8). Therefore, the linear regression analysis allows studying the effect of several factors on a particular phenomenon (Castanheira, 2013). The results of these analyses are also represented in Figs. 2–4.

From the verification of the influence of the social capital on innovation, it was possible to identify some important results. Although several authors highlighted the social capital as an important resource for innovation in networks, this result was not evidenced, at least directly, in the present study (Table 6). Innovation, in the surveyed networks, is being influenced by

Table 6

Linear regression between the social capital and innovation.

Innovation(Dependent variable)	Mean square	F.	Sig.	R ² adjusted	Tolerance	VIF
Product innovation	0.188	1.255	0.294	0.007	0.586	1.707
Service innovation	0.022	0.154	0.927	−0.025	0.487	2.051
Innovation process	0.188	1.439	0.236	0.130	0.577	1.735
Market innovation	0.049	0.482	0.695	−0.015	0.372	2.689
Logistics innovation	0.117	0.602	0.615	−0.012	0.651	1.535
Organisational innovation	0.055	0.477	0.699	−0.015	0.418	2.395

Source: Prepared by the authors, based on the research results.

n: 104.

^a $p < 0.05$.

Table 7

Linear regression between competitiveness and social capital.

Innovation(Dependent variable)	Mean square	F.	Sig.	R ² adjusted	Tolerance	VIF
Organisational assets	19,546	124,742	0.000 ^a	0.783	0.515	1.943
Endogenous resources	12,593	50,292	0.000 ^a	0.589	0.401	2.495
Networking	8621	48,624	0.000 ^a	0.581	0.448	2.231

Source: Prepared by the authors, based on the research results.

n: 104.

^a $p < 0.05$.

Table 8

Linear regression between the social capital and innovation.

Innovation(Dependent variable)	Mean square	F.	Sig.	R ² Adjusted	Tolerance	VIF
Product innovation	0.109	0.720	0.542	−0.08	0.586	1.707
Service innovation	0.161	1.154	0.331	0.004	0.487	2.051
Innovation process	0.930	8.566	0.000 ^a	0.181	0.577	1.735
Market innovation	0.394	4.317	0.007 ^a	0.088	0.372	2.689
Logistics innovation	0.808	4.670	0.004 ^a	0.097	0.651	1.535
Organisational innovation	0.867	9.517	0.000 ^a	0.199	0.418	2.395

Source: Prepared by the authors, based on the research results.

n: 104.

^a $p < 0.05$.

random events, other than social capital stock. One can deduce that the evidenced results in comparison between the networks, presented in Tables 2 and 3 (especially in Aprovale), justify the results found in this analysis, given that the sources of knowledge for innovation would come mainly from customers, suppliers and the company itself, without considering the network partners

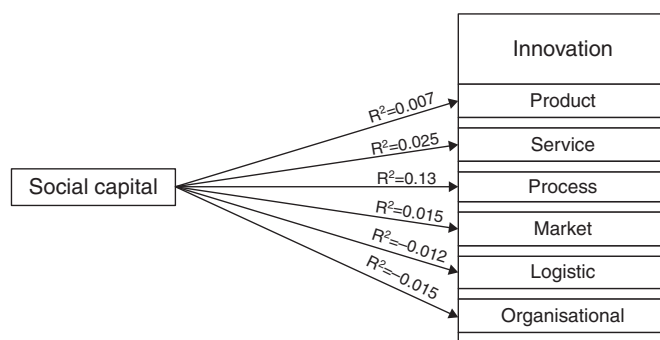


Fig. 2. Analysis model of the dimensions of social capital and innovation.

Source: Prepared by the authors, based on the research results.

and their respective relations of cooperation and trust (social capital elements).

On the other hand, it was found that the factors for the improvement of competitiveness are influenced by social capital stocks in accordance with the results identified in Table 7 and in Fig. 3.

This evidence can be explained by considering that the role of social interactions and relations at the individual, organisational and group level is increasingly significant, being the social capital a tool that can leverage the performance of

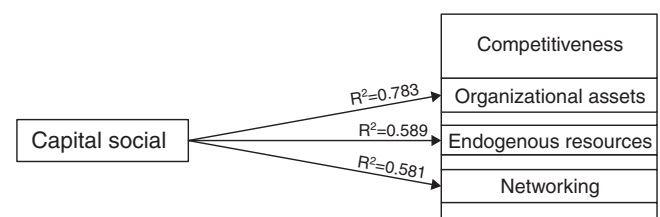


Fig. 3. Analysis model of social capital and competitiveness dimensions.

Source: Prepared by the authors, based on the research results.

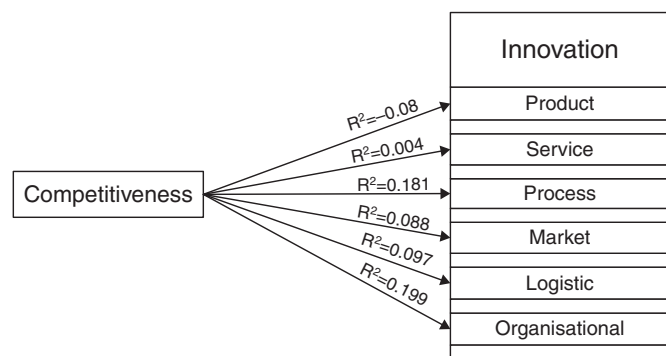


Fig. 4. Analysis model of competitiveness and innovation dimensions.

Source: Prepared by the authors, based on the research results.

enterprises and, consequently, their competitiveness (Akdere & Roberts, 2008).

In addition, the presence of social capital can reduce costs, thanks to the existence of trust and cooperative spirit among the members of the organisations, which also favours organisational competitiveness (Cohen & Prusack, 2001). The social capital represents a kind of bridge between people, bringing benefits to organisations in which individuals act. This feature provides the creation of an environment, wherein the dissemination of knowledge happens by virtue of relationships based on trust, shared goals and common references (Cohen & Prusack, 2001), and these elements can reinforce the competitiveness dimension linked to organisational assets proposed by Wu (2008).

Finally, this study identified that some factors linked to the improvement of competitiveness are related to different types of innovation in networks (Table 8). The results showed that the competitiveness factors influence the process, market, logistics and organisational innovation, but do not influence product and service innovations. In addition, evaluating the R^2 values adjusted shows that mainly the organisational and process

innovation are explained by variations in dimensions to the improvement of competitiveness.

It is possible to justify that processes, market, logistics and organisational innovations are influenced by factors improving competitiveness, given that these are based on shared creation for individual capacities, integration and coordination among the members of the network, the promotion of the tourist potential of the region and the network of contacts established with the network aid. Thus, it is possible to notice that the competitiveness factors are linked to benefits or opportunities from network existence. Balestrin and Verschoore (2008) reinforced this statement by describing the networks, sharing ideas and experiences among members, and promoting conditions for learning and innovation.

It is possible to deduce that the factors of competitiveness do not explain the product and services innovation due the nature of the surveyed organisations. The wine-producers located in the Vale dos Vinhedos perform activities linked to wine tourism and enogastronomy, enhancing the maintenance of traditions of wine making and grape growing in the region. In this sense, the region has several snack bars and projects intended for tourists, where the visitor has the opportunity to know the processes of cultivation of grapes, the elaboration of wines and participate in rituals of tasting (Dalcin, 2008). Thus, the distinction of the region is based exactly on maintaining the tradition of their products and services, which can justify that the competitiveness factors don't explain these two types of innovation.

From the presented results, it is noted that the social capital influences the dimensions of the improvement of competitiveness and that these dimensions, in turn, affect some types of innovation. Thus, one can see that the social capital does not impact, at least directly, the innovation. However, it is considered that this element offers an indirect influence on the innovation of the studied networks, as described in Fig. 5, which summarises the results of the present study.

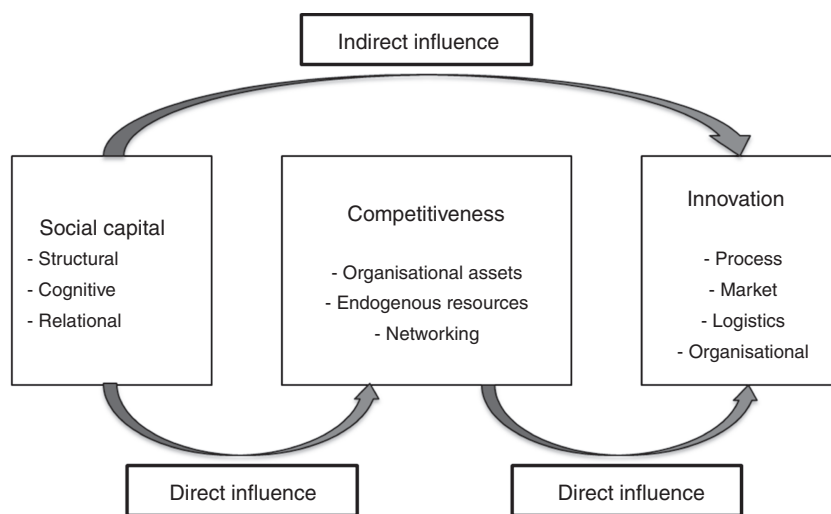


Fig. 5. Framework based on the results of the study.

Source: Elaborated by the authors, based on the results of the research.

6. Final considerations

When you consider that the social development and building sustainable environment depend on factors that go beyond the economic variables, it highlights the relevance of social capital as a resource for the promotion of competitiveness and innovation in the business scenario, especially in the context of the networks. From this vision, the present study assisted in the identification of possible links between these constructs and submitted three contributions considered relevant. The first is related to the goals of the networks and the resulting behaviour linked to sources of information and knowledge for innovation. When the origin and objectives of the network are based on the need for greater cooperation and reciprocity between its members, then the sources of information and knowledge for innovation are related to network partners. On the other hand, lower levels of cooperation and reciprocity direct network members to establish sources for innovation in customers, suppliers and internal environment of organisations. These results were identified in Aprobelo and Aprovale networks respectively.

The second contribution is based on the fact that the stocks of social capital do not influence, directly, the innovation in companies linked to networks. This statement suggests that the existence of social links does not necessarily imply the creation of value for organisations (Maurer, Bartsch, & Ebers, 2011). Thus, it seems possible to deduce that the importance of social capital in the promotion innovation and corporate performance improvement depends on other elements that establish mediation of this relationship.

The third contribution of the study corroborates this statement through the identification of significant influence of social capital on factors for the improvement of competitiveness (organisational assets, endogenous resources and networking) and consequently the impact of these elements on the innovations in processes, market, logistics and organisational. Therefore, the present research showed that within the context studied, the social capital influences the dimensions for the improvement of competitiveness and these dimensions, in turn, affect some types of innovation. Therefore, social capital does not directly influence innovation, but indirectly through the factors for the improvement of competitiveness.

It is considered that the present study presented relevant contributions with regards to the advancement of theory on social capital, organisational competitiveness and innovation. However, the research has some limitations. The main one is related to the sector of economic activity, in which the chosen objects of study are linked. The wine industry has unique features, like the tradition, geographical indications and the designations of origin, which can sometimes affect the influence of social capital on innovation. Therefore, it is suggested that to minimise

the limitations linked to the branch in which the nets belong, future studies should expand the sample of industries networks to be searched. A sample of different sectors can assist in the generalisation of results found.

In addition, the present study aimed at verifying whether the social capital and the competitiveness factors present impact on innovation of companies linked to business cooperation networks. Therefore, the social capital and the factors for competitiveness such as independent variables were considered. According to the evidenced results, it was found that the social capital does not impact directly on innovation. However, this element impacts the competitiveness factors and these factors present significant impact on innovation. In this sense, it is suggested to conduct future studies, in which these relations are more exploited. One possibility is to carry out new research covering the application of structural equation modelling aiming at analysing the model proposed in this study and the existence of variables that mediate relations between the social capital, the factors for the competitiveness and the innovation.

Also, it proposes the development of new studies considering, for example, the influence of social capital on the innovation process. The aspects like the impact of this element in the process of knowledge creation or interorganisational connection during the innovative process can be analysed, once these are established as aspects that may be directly affected by the existence of social capital. Possibly, the social capital exercises a strong influence during the innovation process but not directly on the materialisation of innovation in the form of a new product or new process. Thus, new studies that bother to identify the influence of social capital in the innovation process can contribute to the understanding of the results found in this study. These suggestions may complement or even assist in the advancement of the understanding of the dynamics that involve the topics covered.

7. Conflicts of interest

The authors declare no conflicts of interest.

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Appendix A.

INSTRUMENT FOR EVALUATION OF SOCIAL CAPITAL, COMPETITIVENESS FACTORS AND THE INNOVATION IN COLLABORATIVE BUSINESS NETWORKS

The purpose of this questionnaire is to evaluate the social capital, the factors for competitiveness and innovation within the NETWORK. Therefore, your opinion and participation are essential. Answer according to the reality of the NETWORK. There are no right or wrong answers. Your opinion is what really matters. The individual responses will be kept confidential. Use the 5-point scale to answer the questions of blocks A and B.

Totally disagree	Disagree	Partly agree and partly disagree	Agree	Totally agree
1	2	3	4	5

BLOCK A - SOCIAL CAPITAL

1	Most members know and agree with the goal of the NETWORK.	1	2	3	4	5
2	The NETWORK members always share information with others.	1	2	3	4	5
3	The NETWORK goal is clear also for those that do not join the NETWORK.	1	2	3	4	5
4	I join the NETWORK because I agree with the purpose for which it was created.	1	2	3	4	5
5	There are no obstacles to communication between my company and the NETWORK partners in the exchange of professional knowledge.	1	2	3	4	5
6	The similarities (tastes, beliefs, positions ...) among the participants make the NETWORK dynamics.	1	2	3	4	5
7	The actions taken by the Government could affect my company.	1	2	3	4	5
8	Even my opinion being contrary to most of the other members of the network, I feel comfortable to discuss.	1	2	3	4	5
9	Most of the NETWORK people is reliable.	1	2	3	4	5
10	The NETWORK members seek to always cooperate with each other through ideas, resources, information, etc.	1	2	3	4	5
11	I identify myself with the members of the network.	1	2	3	4	5
12	The differences between group companies do not affect to the NETWORK.	1	2	3	4	5
13	Personal and my company training issues are often discussed in meetings of the NETWORK.	1	2	3	4	5
14	When I need help, I can count on other members of the network.	1	2	3	4	5
15	Within the NETWORK, the members think and act according to the interests of all.	1	2	3	4	5
16	Most of the members of the NETWORK participate in the events proposed BY THE NETWORK (meetings, fairs, lectures, seminars, trips, etc.).	1	2	3	4	5
17	Within the NETWORK, it is necessary to be aware that no one takes advantage of the situation.	1	2	3	4	5
18	In the formal activities of the NETWORK, I feel like I'm part of a group.	1	2	3	4	5
19	The more different ideas exist within the NETWORK, the better it becomes.	1	2	3	4	5
20	I trade confidential information with the NETWORK partners.	1	2	3	4	5
21	Within the NETWORK there are opportunities for the exchange of information.	1	2	3	4	5
22	I consider the NETWORK members as my friends.	1	2	3	4	5
23	The network has a hierarchical structure (President, Directors, associates or different positions ...).	1	2	3	4	5
24	If I need some information to a decision, I know where to find it on the NETWORK.	1	2	3	4	5
25	The NETWORK relates to other entities, with other business associations, trade unions, government agencies, universities, among others.	1	2	3	4	5
26	I have contact with members of the NETWORK at least once a week.	1	2	3	4	5
27	The NETWORK organizes collective activities with our partners: trainings, fairs and events in local society.	1	2	3	4	5
28	In General, there is collective synergy and collaboration between NETWORK partners.	1	2	3	4	5

BLOCK B - FACTORS FOR COMPETITIVENESS						
29	Many times we beat our competitors on the market.	1	2	3	4	5
30	Most of the members of the NETWORK have capabilities to be leader.	1	2	3	4	5
31	I have contact with members of the network also outside the formal activities of it.	1	2	3	4	5
32	If there is a conflict between the members of the network, I propose to mediate it.	1	2	3	4	5
33	Within the NETWORK there are different types of skills, such as technical expertise, management and humanities.	1	2	3	4	5
34	I feel motivated to join the NETWORK.	1	2	3	4	5
35	My company acquired valuable contacts in NETWORK participation.	1	2	3	4	5
36	The NETWORK is very important for the continuity of my company.	1	2	3	4	5
37	When there is a problem within the NETWORK, the members work together so that the problem is resolved.	1	2	3	4	5
38	NETWORK activities are aligned with the main objective.	1	2	3	4	5
39	The members are responsible for bringing new business opportunities for the NETWORK.	1	2	3	4	5
40	The NETWORK members are encouraged to propose changing ideas.	1	2	3	4	5
41	If there is a problem in the company of one of the participants in the NETWORK, others work with him to resolve the same.	1	2	3	4	5
42	The NETWORK leadership respects everyone's opinion.	1	2	3	4	5
43	My company was able to provide higher quality products and services to customers after participating in the NETWORK.	1	2	3	4	5
44	The formation of the business alliance contributes to my company respond more quickly to market needs.	1	2	3	4	5
45	The NETWORK promotes activities in order to stimulate and promote the tourism potential of the region.	1	2	3	4	5
46	The network promotes festivals and events linked to wine and gastronomy typical of the region.	1	2	3	4	5
47	The NETWORK promotes the cultural improvement of members, their family and the community in general to receive tourists and visitors.	1	2	3	4	5
48	The NETWORK promotes actions that promote the organization and preservation of the physical space and the landscape of the region to receive tourists.	1	2	3	4	5
49	In General, my company has become more competitive when began to join the NETWORK	1	2	3	4	5
	NETWORK					

BLOCK C – INNOVATION

The purpose of this questionnaire is to evaluate innovations in your company. Therefore, your collaboration and participation are essential. Answer according to what has happened in the last 5 years in your company. The individual responses will be kept confidential. Use 12 point scale below to answer the questions, where your answer is yes.

1	My own judgment	7	NETWORK partners or through events (courses, lectures, fairs) organized by the association.
2	Customers	8	Partners of other associations/networks.
3	Suppliers	9	Trade fairs and exhibitions
4	Family and closer friends	10	Governmental institutions (Eg EMBRAPA, EMATER, etc.)
5	Partners/Employees	11	Univerities
6	Competitors	12	Media (Eg; television, newspapers, internet)

PRODUCTS

				If so, select the main source of information/knowledge.											
50	My company made changes in the components of the product.	<input type="checkbox"/> NO	<input type="checkbox"/> YES	1	2	3	4	5	6	7	8	9	10	11	12
51	My company made changes to the design of the products.	<input type="checkbox"/> NO	<input type="checkbox"/> YES	1	2	3	4	5	6	7	8	9	10	11	12

SERVICES

				If so, select the main source of information/knowledge.											
52	My company made changes in the of providing customer service.	<input type="checkbox"/> NO	<input type="checkbox"/> YES	1	2	3	4	5	6	7	8	9	10	11	12
53	My company introduced new types of services.	<input type="checkbox"/> NO	<input type="checkbox"/> YES	1	2	3	4	5	6	7	8	9	10	11	12

PROCESSES

				If so, select the main source of information/knowledge.											
54	My company has improved production processes.	<input type="checkbox"/> NO	<input type="checkbox"/> YES	1	2	3	4	5	6	7	8	9	10	11	12
55	My company started to use new equipment / new technologies.	<input type="checkbox"/> NO	<input type="checkbox"/> YES	1	2	3	4	5	6	7	8	9	10	11	12

MARKET															
				If so, select the main source of information/knowledge.											
56	My company won new targets of marketing of the product.	<input type="checkbox"/> NO	<input type="checkbox"/> YES	1	2	3	4	5	6	7	8	9	10	11	12
57	My company won a new market segment.	<input type="checkbox"/> NO	<input type="checkbox"/> YES	1	2	3	4	5	6	7	8	9	10	11	12

LOGISTICS															
				If so, select the main source of information/knowledge.											
58	My company started using new raw materials.	<input type="checkbox"/> NO	<input type="checkbox"/> YES	1	2	3	4	5	6	7	8	9	10	11	12
59	My company sought new raw materials sources.	<input type="checkbox"/> NO	<input type="checkbox"/> YES	1	2	3	4	5	6	7	8	9	10	11	12

ORGANISATIONAL															
				If so, select the main source of information/knowledge.											
60	My company presented a new manufacturing management system.	<input type="checkbox"/> NO	<input type="checkbox"/> YES	1	2	3	4	5	6	7	8	9	10	11	12
61	We started to use the quality control in the production.	<input type="checkbox"/> NO	<input type="checkbox"/> YES	1	2	3	4	5	6	7	8	9	10	11	12
62	We simplify the decision-making process.	<input type="checkbox"/> NO	<input type="checkbox"/> YES	1	2	3	4	5	6	7	8	9	10	11	12
63	The company introduced new ways of development and training of human resources.	<input type="checkbox"/> NO	<input type="checkbox"/> YES	1	2	3	4	5	6	7	8	9	10	11	12

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