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Social Capital, Innovation and Entrepreneurial Orientation in SME Companies:

A Study on ICT Clusters in Brazil and Spain

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Social Capital, Innovation and Entrepreneurial Orientation in SME Companies: A Study on ICT Clusters in Brazil and Spain

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SUMMARY

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Abstract

Social capital has often been viewed as a comprehensive concept that enhances corporate performance. This work seeks to study this multi-dimensional concept as one of the keys to the success of small and medium-sized companies. It is building relationships with business partners in order to take advantage of the limited resources available to them, with this in mind. In mind, the social capital theory has been applied to clarify the effect of each dimension of social capital on innovation and entrepreneurial orientation. The study was conducted on secondary data to confirm the theoretical proposal presented by 226 companies from two ICT groups in (Santa Catarina / Brazil and Barcelona / Spain). As for the methodological aspects, the quantitative approach was applied to analyse the data. Descriptive statistics, correlation, and multiple regression analysis were used to test the hypotheses. Our study pointed out that each dimension of social capital has a positive impact on innovation and entrepreneurial orientation, but the cognitive dimension has the biggest effect.

Research limitations/implications - This study has some limitations. The first is that our research focused only on the information and communication technology sector to test hypotheses, which may limit the spread of results to other industries or sectors.

Practical implications - The theoretical suggestion and the results obtained represent a contribution to many lines of research. This study improves the understanding of social capital, innovation, and entrepreneurial orientation in SMEs companies

Originality / Value - This research enriches current knowledge by examining the relationship between the dimensions of social capital, innovation and entrepreneurial orientation in the context of ICT SMEs.

Keywords: social capital, innovation, structural, cognitive, entrepreneurial orientation, ICT.

1 Introduction

The concept of social capital has been in use for almost a century, and the ideas on which it is based go back further (Beckers, van Gent, Iedema, and de Haan, 2003; Knack and Keefer, 1997; Pigg and Crank, 2004; Rohde, 2004). It is applicated in various disciplines and many subject areas that´s why it gets a lot of interest from academics and practitioners. It is controversial because it raises many meanings (Farr, 2004).

The most prominent authors who brought social capital to the spotlight are Pierre Bourdieu, James Coleman, and Robert Putnam. Bourdieu (1986) focused on theories of social reproduction and symbolic power, as he considers it as an economic concept only and that social exchanges are not limited to self-interest only, but include "capital and profit in all its forms"(Bourdieu, 1986, p. 241)

Although Coleman (1988) agreed with Bourdieu (1986) that social capital is primarily based on the social structure of relationships between people. Coleman (1988) envisioned social capital as a product of social structure and foundations for a rational choice approach and considered it a collective asset of the group and public good as everyone benefits from the actions of individuals.

On the other hand, Putnam (1993) interpretation of social capital contrasted with Bourdieu (1986) theory, as he interpreted it from a democratic or civil perspective as a public asset, it is the amount of participatory potential, civic direction, and trust that constitute a collective trait that works at the macro-level (Putnam 1993, 2000).

Nahapiet and Ghoshal (1998) concept is near to Coleman (1988) and Putnam (1993), defining social capital as the sum of the actual and potential resources embedded within, available through, and derived from the networks of relationships by an individual or social unit, according to Korkeila and Hamari (2020, p. 17), "Social capital is connections and networks among individuals and groups". Social capital is connected to different constructs like spin-offs and clusters (Cardoso, Hoffmann, and Fernández, 2019), performance (Andrews, 2010), and innovation (Akçomak and Ter Weel, 2006; Bonfim, Segatto, and Takahashi, 2018). For this study, we pay more attention to innovation.

Innovation is “the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations” (OECD, 2005 p 146). The information and communications technology sector is one of the most important and largest sectors facing the challenge of innovation in a permanent way, because of the impact of innovation on the performance of companies in this industry, through improving operations and creating new products and services (Ezzi and Jarboui, 2016; Ivanov and Avasilcăi, 2014) and on financial performance (Gërguri - Rashiti et al. 2017).

We find that innovation studies in these sectors are not so common (Mainardes, Mattos, and Alves, 2016), there are difficulties in estimating the efficiency of innovation for companies (Teplykh, 2016), especially innovation that is affected by many internal and external factors. So, we find that the concept of measuring innovation is unclear and the indicators' measurements are not universal and differ from one study to another according to the sample, country, resources and competitors (Hagedoorn and Cloodt, 2003).

Social capital is connected to innovation in different contexts (Kim and Shim, 2018; Rastrollo-Horrillo and Rivero Díaz, 2019). It is a framework that explains the effect of inter-organizational relationships on innovation (Subramaniam and Youndt, 2005) in terms of the magnitude of change and degree of novelty (Gatignon, Tushman, Smith, and Anderson, 2002). Although social capital is not enough alone to explain the influence on innovation policies and science and technology, that does not eliminate its importance and necessity as an influencing factor (Aragón, Aranguren, Iturrioz, and Wilson, 2014; Fountain, 1998), it is in somehow a facilitating and encouraging for innovation (Adler and Kwon, 2002b; Hauser, Tappeiner, and Walde, 2007), especially in clusters and regions (Cantner, Conti, and Meder, 2010; Malecki, 2012).

Thus, social capital’s impact on innovation performance is still contentious and there is no one result for that subject for sure not all dimensions of social capital exhibit the same effect (Hauser et al., 2007). Some authors discussed the positive effect (Burt, 2000; Calantone, Cavusgil, and Zhao, 2002; Guiso, Sapienza, and Zingales, 2008; Hult, 2002; Hult, Hurley, and Knight, 2004; Knack and Keefer, 1997; Levin and Cross, 2004; Lin, Fu, and Hsung, 2001; Lu and Yang, 2004; Martínez-Pérez, García-Villaverde, and

Elche, 2016; Nahapiet and Ghoshal, 1998; Nichols, 1996; Paxton, 1999; Putnam, 2000; Song and Thieme, 2006). In improving individual relationships within the organization (Moran, Russell, Koga, and Fukatsu, 2005), and gaining knowledge by sharing information and capacity within the network (Krause, Handfield, and Tyler, 2007), others discussed the negative effect (Adler and Kwon, 2002a; Guo, Zhao, and Tang, 2013). when collaborative relationships may turn into a limitation of the free flow of information and new ideas. Therefore, social capital becomes an inhibiting factor to the SME because as it impedes the identification of potential opportunities caused by over-embeddedness (Gabbay and Leenders, 1999) some authors discussed the indirect effect of social capital on innovation through competitive advantage (Faccin, Genari, and Macke, 2017), thus, social ties do not necessarily imply the existence of innovation, and social capital may not depend on innovation in networked firms (Maurer, Bartsch, and Ebers, 2011).

In another context, the recent studies start to give great importance to entrepreneurship and the characteristics of existing and potential entrepreneurs (Guzmán and Javier Santos, 2001; Liñán, 2004). entrepreneurial orientation is "defined as the strategic posture in which a firm exhibits innovative, proactive, and risk-taking behaviors" (Jiang, Liu, Fey, and Jiang, 2018, p. 46). Schumpeter (1951) proposed the concept's dimensions (1) innovation, (2) risk-taking, and (3) proactive (Wang and Altinay, 2012).

Social relations play a part in entrepreneurial orientation (Hernández-Carrión, Camarero-Izquierdo, and Gutiérrez-Cillán, 2019; Rodrigo-Alarcón, García-Villaverde, Ruiz-Ortega, and Parra-Requena, 2018; Sahasranamam and Nandakumar, 2020; Tok and Kaminski, 2019) because social skills are one of the most important skills that entrepreneurs depend on for their success (Baron and Markman, 2000). Like the innovations studies, the empirical studies of entrepreneurship focused on specific countries or use specific dimensions of social capital, therefore, their result is limited and cannot be generalized (Light and Dana, 2013; Percoco, 2012).

Therefore, the positive and negative effects of social capital on entrepreneurial orientation have become a subject of debate, despite that, the studies did not cover the gap in this area (Audretsch, Keilbach, and Lehmann, 2006). And even, there is no consonance about the role of social capital dimensions (Hite and Hesterly, 2001; Hoang

and Antoncic, 2003). Some studies discussed the positive role that social capital plays on entrepreneurial orientation (Ali, Hilman, and Gorondutse, 2020; Basco, Hernández-Perlines, and Rodríguez-García, 2020; Hunt, 2021; Jiang et al., 2018; Kollmann, Stöckmann, Niemand, Hensellek, and de Cruppe, 2019) in reinforcing the start-up's performance (Yli-Renko, Autio, and Sapienza, 2001), risk-taking and uncertainty, improving professional competence, and restraining excessive opportunism (Knack and Keefer, 1997), providing information, opportunities, and funding sources (Hoang and Antoncic, 2003). While others discussed the negative role of social capital like interest in saving personal relationships rather than interest in productivity (Kautonen, Zolin, Kuckertz, and Viljamaa, 2010).

Despite the almost complete consensus on the positive effects of social capital in general on innovation and entrepreneurial orientation, some harmful effects have been found, which necessitates more scrutiny of the social capital dimension's role, and this is our research question: What is the impact of social capital on innovation and entrepreneurial orientation in the ICT industry?

Small and medium-sized companies (SMEs) are firms in which all managerial decisions are made by a single entity or a small group of individuals (Cassells and Lewis, 2011). SMEs are commonly defined as firms that have less than 250 employees (European Commision, 2016; Oecd, 2005). It is considered a basis for economic development (Asiedu, Shortland, Nawar, Jackson, and Baker, 2019; Ntwoku, Negash, and Meso, 2017), especially in developing countries, where its impact is greater compared to its impact in developed countries (Cataldo, Astudillo, Gutiérrez-Bahamondes, González-Martínez, and McQueen, 2020). This impact is because of its significant contributions to economic development, job generation, and poverty reduction (López-Pérez, Melero, and Javier Sesé, 2017; Shah, Yasir, Majid, and Javed, 2019; Westman et al., 2019).

Pressures are increasing in the information and communication technology sector (ICT) due to the many challenges that include continuous technological modernization, and the diversity of customer needs (Bai, Yuan, and Pan, 2017), which made competition intense and proactive an important factor for survival and development (Ebrahimi and Mirbargkar, 2017).

These companies face the challenges of survival and growth more than others due to their limited resources and depend for their survival on the decisions made by the individuals in charge of their management, specifically their personal characteristics and knowledge (Sen and Cowley, 2013) because one of the most important reasons in the failure of SMEs is poverty in their management capacity (Lavia López and Hiebl, 2015; Storey, 2016; Wynarczyk, Watson, Storey, Short, and Keasey, 2016).

Therefore, social interactions in the business environment are considered a major source for the success of these companies, because it represents potential pools of resources that they can exploit to their advantage (Halme and Korpela, 2014; Nahapiet and Ghoshal, 1998; Westman et al., 2019), and because flexible and effective interactions create an environment of cooperation and learning and facilitate the creation of ideas and creativity, which is an important component in enhancing to reach innovation (Parnell, Long, and Lester, 2015). Therefore, SMEs are a major source of innovation (Brunswicker and Vanhaverbeke, 2015; Khan, Xuehe, Atlas, and Khan, 2019).

1.1 Objectives

The objective of this study is: Determining the impact of social capital dimensions on innovation and entrepreneurial orientation in small and medium-sized companies in the ICT industry.

The specific goals are:

1) Measuring the impact of each dimension of social capital on innovation (H1.1 to H1.3)

2) Measuring the impact of each dimension of social capital on entrepreneurial orientation (H2.1 to H2.3)

2 Theoretical Background

2.1 Social Capital and Innovation

In the Science Direct platform, a search with the term “social capital” in business, management, and accounting, considering just research papers, shows the paper amount was 1896 in the year 2016 and 3026 in the year 2020. So, we can say the concept of social capital has become very popular. The growing interest in it stems from the attractiveness that surrounds it and its applicability in many economic and social fields. Many researchers go back to the first appearance of the concept in 1916 when Lyda Hanifan mentioned in the article "The rural school community center"(Hanifan, 1916) that the individual is socially incapable if he/she is left alone. It means that the individual must be in contact with a group he/she belongs to because the accumulation of this social contact creates in the local community improvements on basic living conditions (Hanifan, 1916, p. 130). Some authors attributing the origin of the concept of social capital to the nineteenth century, with the studies of Toquecville on democracy in America that highlight essential and distinctive components of social capital about other democracies (Fukuyama, 2000). There is consensus that the concept was mainly developed by the three researchers, Pierre Bourdieu, James Coleman, and Robert Putnam as we presented before, in the introduction.

Pierre Bourdieu presented the first contemporary systematic analysis of the concept where he transcended the classical economic dimension (wealth-related) to a vision that reflected a multidimensional interpretation of social phenomena (Häuberer, 2011). Bourdieu defined social capital in an article published in 1980 as “the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition" (Bourdieu, 1986, p. 248).

With a different approach, Coleman (1990) adopted his definition based on a constructive and functional view. So, social capital does not express a single entity but a group of different entities that have two main characteristics: first, they all consist of some aspects of social structure; and secondly, they facilitate certain actions of individuals who are within the structure (Coleman, 1990, p. 302). Coleman's vision of social capital is summarized in the context of rational choice theory, and he believes that

social capital key is the solidarity between individuals to maximize the benefit from the resources distributed between them, through the rational selection to solve problems and choose the best solutions and as the exchange between them will increase when permanent social relations such as trust are established (Häuberer, 2011). He explained the forms and manifestations of social capital in three forms: (i) expectations and commitments; (ii) possible information; (iii) effective rules and penalties (Coleman, 1990, pp. 306–311). We can notice the similarities between Coleman (1990) and Bourdieu (1986), both of them emphasized the role of social relations to gain more benefits for individuals. The difference between them was that Coleman (1990) focused his attention on the function of social capital, its nature, confidence, exchange, and sanctions, while Bourdieu (1986) focused more on individual nature.

Putnam (1995) study of social capital was based on Coleman (1990) vision. He considered the essence of social capital to be the characteristics of social life that allow individuals to work together to achieve society's goals more efficiently, where relationships consist of social networks, standards of trust, and social exchange that ensure value to individuals (Häuberer, 2011). Social capital was defined as "the features of social organization such as networks, standards, and social trust that facilitate coordination and cooperation for mutual benefit" (Putnam, 1995, p. 67). The most important difference between Putnam (1995) and Bourdieu (1986) in analysing social capital is that Bourdieu (1986) viewed it from an individual perspective, but Putnam (1995) view encompasses both individual and social aspects (Portes, 1998). Therefore, to predict the efficiency of social cooperation, we must calculate the number of civil institutions, the greater number referred to greater the ability of members of society to overcome obstacles and interconnectedness for the common good (Boix and Posner, 1996). Putnam (1995) identifies the most important components of social capital in three main indicators: (i) trust (ii) reciprocity (iii) civil engagement. The last indicators are interlinked and contribute to the growth of trust in modern society (Häuberer, 2011).

From the above, we infer that capital has no explicit definition or clear meaning, for fundamental and ideological reasons (Dolfsma and Dannreuther, 2003). In fact, it is possible to find a contradiction between the different definitions(Adler and Kwon, 2002), and this difference comes according to the focus on the form, source, or outcome of social capital (Grootaert and Van Bastelaer, 2002).

The difficulty in finding a definition of social capital can be generalized to include difficulty in measuring it as well. As “one of the greatest weaknesses in the concept of social capital is the lack of consensus on how to measure it" (Fukuyama, 2001, p. 12), most attempts to measure it have reached defective or imperfect results due to problems with the separation of form, source, and consequences (Adam and Rončević, 2003).

In fact, this is very normal for an old concept, but still without an agreed definition, as the existing definitions mix between functional and causal of social capital (Durlauf, 2002). Thus, as we are not able to generalize a definition, we will continue finding studies that measure social capital inconsistently (Liu and Besser, 2003), most of these studies follow methods that were designed for other purposes and do not adequately take into account the theoretical underpinnings of the concept, and then methods will remain "questionable" (Stone, 2001, p. 8). But even if we concede that there is no acceptable, reliable, and widely applicable scale, the characteristics, and potentials of the concept will remain unknown (Durlauf, 2002).

Thus, social capital cannot be measured directly (Collier, 2002). Some researchers take trust as a single standard because some consider it equal to social capital (Fukuyama, 1997) a source of it (Putnam, 1993) or even one of its forms (Coleman, 1988). Others measure it based on the individual or community level (Ziersch and Baum, 2004) or membership (Warde et al., 2003).

Back to the complex, multifaceted nature of social capital, we can consider that it is not easy to adopt a single measure, the best is to adopt a multidimensional one (Cox and Caldwell, 2000) such as membership and trust (Veenstra, 2002), membership and trust and reciprocity rules (Staveren, 2003). And according to Stone, (2001), we would be able to find a suitable basis for developing a measure by linking the measurement of the concept directly with the theoretical understanding of it.

As result, the concept of social capital is comprehensive and includes multiple and complex dimensions and relationships. But to facilitate the study of the concept to some extent, we can follow Buttice, Colombo, and Wright, (2017) who identified three dimensions of social capital -structural, cognitive, and relational. These dimensions represent conceptual differences that facilitate the analysis of social capital (Nahapiet and Ghoshal, 1998).(Beltramino, García-Perez-de-Lema, and Valdez-Juárez, 2020).

There are many studies connecting Social Capital and innovation. We can find these studies from the last twenty years like Akçomak and Ter Weel (2006); Cantner et al., (2010); Dakhli and De Clercq (2004); Hauser et al. (2007); Iturrioz et al. (2015); and some more recent ones like Bonfim et al., (2018); Cardoso et al. (2019); Kim, N., and Shim, C. (2018; Omamo, A.O., Rodrigues, A.J. and Muliaro, W.J., 2020; Nawinna, D. and Venable, J.R., 2019; Beltramino, N.S., García-Perez-de-Lema, D. and Valdez-Juárez, L.E., 2020).

The term "innovation" first appeared in the texts of law in the thirteenth century as a term for the renewal of contracts, the concept has evolved a lot since its emergence in the 1950s when it is no longer seen as a group of isolated events but rather is the result of the exchange of knowledge, interactions, and many factors and interconnected actors (Landry, Amara, and Lamari, 2002; Zheng, 2010). But the beginning of focusing on innovation takes great interest since it was introduced by the Austrian economist Joseph Schumpeter in 1911, he defined it "as the formation of new products or services, new processes, raw materials, new markets, and new organizations" (Loja and Barbosa, 2020, p. 59)

The concept of innovation gained its widespread reach after it was introduced by Rogers in 1962 when he defined it as “An idea, practice, or project that is perceived as new by an individual or other unit of adoption” (Rogers, 2003, p. 12). Rogers was credited with breaking the stereotype in which most of the studies that preceded him covered the concept of innovation. As most of them discussed the concept from a marketing perspective or through a competitive advantage perspective as it is a necessity for the survival of the company (van Oorschot, Hofman, and Halman, 2018). Since then, studies continued to grow rapidly, which resulted in a wide range of literature and studies which titles the important and profound implications that innovation has for society, and economic development (Simmie, 2005), and regional development (Alam and Adeyinka, 2020; Alam, Erdiaw-Kwasie, Shahiduzzaman, and Ryan, 2018; Alam and Mamun, 2017; Banwo, Du, and Onokala, 2017).

In view of the foregoing, we find that innovation simply expresses knowledge that leads to the creation of what is new, and this knowledge can be perceived in two types (1) technological knowledge and (2) market knowledge (Freeman and Soete, 1997; Murovec and Prodan, 2009). This means that innovation needs different types of

knowledge that require interactions inside and outside the company. This necessitates the importance of studying the impact of these two types of knowledge on innovation in companies (Gupta, Tesluk, and Taylor, 2007), and justifies the importance of linking the concept of social capital with innovation, as it shows the relevance of social relationships in learning and the exchange of resources, knowledge, configurations, and patterns of communication between companies within the network (Nahapiet and Ghoshal, 1998).

There is large number of factors that affect innovation, one of them is social capital, which started to be considered as an important factor(Adler and Kwon, 2002b; Iturrioz, Aragón, and Narvaiza, 2015). There are many theories that study innovation like the organizational development theory, the concerns-based adoption model, the cultural-historical activity theory, and the social network theory. All of these theories go beyond the structural–functionalistic views on innovation and the main subjects in the process of innovation are the professionals (Ehlen, 2015), while the social capital theory highlights the relevance of social processes for the creation of new knowledge and products.

2.1.1 Structural Dimension of Social Capital and innovation

Structural dimension indicates a network for access to people and resources (Andrews, 2010) social interaction ties (Lefebvre, Sorenson, Henchion, and Gellynck, 2016) linked to the characteristics of social order, the network of relationships, subjective interpretations of common understanding (Nahapiet and Ghoshal, 1998), the effects of links in terms of strength, frequency, convergence, and network density on innovation (Zheng, 2010). It includes roles, rules, precedents, and procedures (Uphoff and Wijayaratna, 2000). It represents the ability of individuals to relate to others within the organization and emphasizes the links within the business network, their shape, and suitability for the organization (Chiu, Hsu, and Wang, 2006). This dimension is tangible compared to the remaining dimensions and it is easier to notice. As it expresses the benefit, information and assistance provided by the individual to his/her social network, here it must be noted the importance of how many, how strong and with whom this relationship is (Taylor, 2007).

Numerous studies have demonstrated that the structural dimension plays a major role in influencing the performance of an organization, especially in accomplishing administrative orientation tasks and improving individual relationships within the organization (N. A. Moran, Russell, Koga, and Fukatsu, 2005). By maintaining strong and frequent relationships with various contacts, the company will be able to access as much knowledge and resources as possible, thereby improving the exchange of this knowledge and exploiting it in a way that serves the learning processes that necessary to know the market within the network (Murovec and Prodan, 2009). This contributes to the result in achieving effective innovation (Gianiodis, Ettlie, and Urbina, 2014) and many studies have indicated the positive impact of structural dimension on innovation (Parra-Requena, Ruiz-Ortega, and Garcia-Villaverde, 2013; Tsai and Ghoshal, 1998a; Zheng, 2010).

But in contrast, it is interesting to notice that the same reasons that were mentioned as points with a positive impact of structural dimension on innovation are, somehow, the same ones that constitute negative impact points. As these networks can create challenges related to the company itself and the extent to the necessary skills, it needs to be able to benefit from the knowledge available in the network (Van Waarden, 2001). It also creates external problems by a repetition of information exchanged within the network (Koka and Prescott, 2002). Concerning the lack of interest between competitors to obtain new information and ideas from outside the network (Inkpen and Tsang, 2005), and for sure we cannot neglect the costs of finding alternative opportunities in time, money, and effort to maintain and expand the company's social network (Zheng, 2010).

Whereas, the analysis of companies within the country shows significant differences in levels of innovation, the analysis within the cluster or regions requires show greater homogeneity (Akçomak and Ter Weel, 2006). Studies have examined the positive effect of clusters on companies' performance and innovation (Cantner, Conti, and Meder, 2010; Malecki, 2012), especially in the cluster of information and communications technology (ICT) (Korolev, Sekerin, Bank, Gorokhova, and Arutyunyan, 2017; Beltramino, N.S., García-Perez-de-Lema, D. and Valdez-Juárez, L.E., 2020)

Where companies facing, especially small and medium-sized companies, great challenges to reach innovation such as high costs, uncertainty, and lack of financial resources (Aernoudt, 2005), the technical knowledge is of an implicit nature, which reduces the problems of repetition of information exchanged within the network and because the transfer of technological knowledge requires close and personal contacts (Dyer and Nobeoka, 2000), market knowledge becomes easily transferable (Molina-Morales, Capó-Vicedo, Tomás-Miquel, and Expósito-Langa, 2012). Thus strong, relational, and converging relationships (structural social capital) create an enabling environment for the transfer of technological knowledge (Tiwana, 2008) which facilitates innovation (Lin, Li, and Chen, 2006). Based on these arguments, we make the following hypothesis:

H1.1: There is a positive relationship between structural social capital and innovation.

2.1.2 Relational Dimension of Social Capital and Innovation

The relational dimension of social capital demonstrates the kind of individuals' relationships that has been created by the members of a network with each other through interactions (Chen et al., 2016). relates to characteristics, power, and qualities of relationships that individuals have developed with each other through their history of interactions, such as trust, obligations, respect, trustworthiness, norms, sanctions, and friendships (Gooderham, 2007; M. Granovetter, 1985; Kale, Singh, and Perlmutter, 2000; Nahapiet and Ghoshal, 1998), or what (Putnam, 1993) calls general reciprocity, identity, and identification.

Trust is the most discussed factor within this dimension. It expresses the desire for an individual to be vulnerable to the actions of others that are not monitored or controlled (Mayer, Davis, and Schoorman, 1995). Defined as "a tendency to a better assumption when explaining the motives and actions of others" (Uzzi, 1997, p. 43) or a desire to reconcile one's point of view and expectations for the outcome of one's work (Misztal, 2013). It can be divided according to (Cook and Wall, 1980) into two branches: (i) believing in the trustworthy intentions of others, and (ii) trusting the ability of others that leads to describing ability and reliability.

While Lewis and Weigert, (1985) divided it into awareness-based on good causes, and trust based on the impact linked on emotional bonds between people. In addition, (Rousseau, Sitkin, Burt, and Camerer, 1998) divided it into three types: (i) trust-based on deterrence: “utilitarian considerations,” meaning trust that results from deterrent penalties that will be imposed on the violator upon breach of the trust granted(Van De, 1992); (ii) trust-based on calculus: "rational choice" is the confidence that results from believing in beneficial outcomes because of reliable behaviour (Rousseau et al., 1998); (iii) trust-based on relation: "frequency of interaction" resulting from past, positive, and repeated interaction experiences (Rousseau et al., 1998).

Lewicki and Bunker, (1996) indicated that time plays a role in the hierarchy of species since at the beginning of the interaction stages trust is built on deterrence and fear of punishment in case of violation. Then the parties begin to perceive the behaviors of each other and turn into trust-based on calculus and complementarity, then with repeated interactions and interactions turn into trust-based on the relation (Lewicki and Bunker, 1996).

Studies discussed the impact of trust on lowering transaction costs, successful negotiations, dispute settlement, open communication, cooperation, and knowledge sharing (Brelade, 2000; De Long and Fahey, 2000; Politis, 2003; Williamson, 1975), reduce difficulties when sharing knowledge and also by reducing the fear of opportunistic behavior (Vlaisavljevic, Cabello-Medina, and Pérez-Luño, 2016) and it is considered a factor contributing to developing relationships between decision-makers to be more open and transparent (Blau, 2017) which enhances the company's business reputation and reduces opportunistic and exploitative behavior (Jarillo, 1988; Sabel, 1993).

In such an environment, the flow of information and its reliability within the network becomes easy and effective, the resources in the network are exploited and the user's identity is enhanced and recognized in a certain social space (Lin, Fu, and Hsung, 2001). A trust relation encourages the unification of joint efforts (Ring and Van de Ven, 1994), and gives a feeling of security, a willingness to take risk-taking and override formal procedures, and allows openness to experiment with new ideas and methods (West, 1990). Therefore, collaboration becomes an intuitive result because less collaborative environments increase conflict and monopolize resources and information

(Dyer and Chu, 2003). Trust and cooperation lead to bypassing the restrictions imposed by contracts and provisions (Villena, Revilla, and Choi, 2011). It causes risk-taking for sure, but it opens the way for new opportunities to increase innovation as well (Ring and Van de Ven, 1992).

There are many studies that support the idea of the positive impact of trust on innovation, such as (Dakhli and De Clercq, 2004) that discussed the relationship between public trust in institutions on innovation at the country level. Likewise (Lee and Choi, 2003), who argued that the employees' trust in their companies was positively reflected in their creativity. In the same context Moran, (2005) emphasized that the high levels of trust that sales managers have, led to more innovation in the operations and products level. While (Rodríguez, Pérez, and Gutiérrez, 2007) discussed that trust between Research and development (R and D) and marketing departments boosted the performance of new products. In information technology, Ruppel and Harrington, (2001) found that managers' confidence in employees reflects positively on innovation in their work and creates a general atmosphere of organizational trust.

Norms also is an important aspect of relational dimension of SC. Usually, norms are studied within the literature of organizational culture, where its role in organizing individual behavior is discussed (Russell and Russell, 1992). They are defined as expectations of appropriate or inappropriate behavior (Reilly, 1989), or what is called “implicit rules of behavior” (Russell and Russell, 1992, p. 644). Norms play a role in anticipating how individuals interact with other people's attitudes and behaviors and help modify their behaviors to gain greater acceptance and avoid unwanted behaviors (Chatman and Barsade, 1995).

In the context of innovation, norms play an important role in mentoring because formal procedures in their formal form may not be effective (Russell and Russell, 1992).

Reilly, (1989) Defined three dimensions of the criteria for fostering creativity (taking risk-taking, rewards, and openness) and three dimensions for promoting the implementation of the idea (common goals, autonomy, and belief in action). Russell and Russell, (1992) set eight dimensions of standards. Ayers, Gordon, and Schoenbachler, (2001)concluded that relational standards are positively linked to the success of new products by studying the relationship between research and development and marketing in companies and the success of the new product.

Although there is a difference in dimensions, there is a generalization without a supported proof, but most researchers have agreed on it, which discusses the necessity to choose norms according to the stages of innovation (Reilly, 1989; Russell and Russell, 1992). On the other hand, some standards may adversely affect innovation (Ayers et al., 2001).

Tsai and Ghoshal (1998) discussed the idea that the effect of relational social capital on the exchange and collection of knowledge is partially mediated by structural dimension. This is logical because the network structure (structural social capital) forms the basis for desired interactions between individuals (relational social capital), so the quality of relationships increases, and leads to the promotion of innovation. Based on these arguments, we make the following hypothesis:

H1.2: There is a positive relationship between relational social capital and innovation

2.1.3 Cognitive Dimension of Social Capital and Innovation

The cognitive dimension of the SC is the combination of resources that provides shared vision, goals or paradigm that facilitates and proposes suitable ways of doing things in a social system (Lins et al., 2017), expresses how individuals process information so that they give shape and meaning to this information (Walsh, 1995). The social features facilitate communication between group members such as shared representations and shared symbols (Tsai and Ghoshal, 1998). Bourdieu refers to it as "a set of dispositions, reflexes, and forms of behavior people acquire through acting in society" (Bourdieu, 2000, p. 19). It is an intangible dimension, relates to resources providing shared representations, interpretations, and systems of meaning among parties (Nahapiet and Ghoshal, 1998).

Cognitive dimension refers to the resources that provide a common vision (Inkpen and Tsang, 2005; Tsai and Ghoshal, 1998), shared culture and shared language, narratives, and codes that provide the foundation for communication (Gooderham, 2007). These languages and codes are specific and have meaning within the organization only, it could assume other meanings in other organizations (Ansari, Munir, and Gregg, 2012).

The cognitive dimension expresses the importance of similarities organizational cultures show in order to create better conditions for negotiation that make all parties strive to achieve mutual goals that will mutually benefit their relationship and increase their competitiveness in the short and long terms (Villena, Revilla, and Choi, 2011)

As in the relational social capital, a lack of cognitive social capital leads to conflicts and opportunistic behavior in resources (Ouchi, 1980), and time and effort are wasted in conflict resolution that affects innovation and passively develops and implements innovative strategies (Holcomb and Hitt, 2007). The ability to innovate is affected by cognitive social capital, because when culture and values matched on goals, it reflected a higher degree of risk-taking (Villena, Revilla, and Choi, 2011) and increasing the speed of innovation, by enhancing the values, vision, and common goals of the participants in the innovation process so reduce conflicts (Zhang et al. 2020). Excessive cognitive social capital gives negative consequences on innovation due to the lack of a critical relation and ideas' generalization and the lack of acceptance of alternative points of view, this term was called "collective blindness" (Villena, Revilla, and Choi, 2011, p. 564) where decision-makers make incorrect decisions because of common awareness, they may blind them from being aware of the changes taking place in their environment.

There is limited research on the relationship between shared cognition and innovation, due to the confusion in defining a unified term for common perception as a review. Walsh, (1995) found that literature during ten years used 80 different terms to express shared cognition, which would be reflected in the identification of cognitive forms which encourage innovation. Or maybe because some authors combine the cognitive and relational dimensions and use the name cognitive dimension to denote them (Chou, 2006; Grootaert et al., 2004; Krishna and Shrader, 1999; Uphoff, 2000; Van Bastelaer, 1999). Or, the reason for confusing the two dimensions is that both of them are perceptive and intangible (Nahapiet and Ghoshal, 1998). But it can be said that there are studies that showed positive results such as (Donnellon, Gray, and Bougon, 1986), which showed that the cognitive dimension has a positive effect because it helps to understand the changing conditions in the environment. Dutton and Dukerich, (1991) emphasized the effect of the cognitive dimension in responding to environmental factors. Ford and Baucus, (1987) discussed the positive effect of the cognitive dimension on organizational responses to performance. (Garcia-Morales, Ruiz Moreno, and Llorens-

Montes, 2006) whose results confirm the positive relationship between a shared vision and organizational innovation in Spanish companies. Ginsberg, (1994) also discussed the effect of cognitive vision on organizational competitive advantage. Which contributes to bringing the views of individuals in subgroups closer (Fiol, 1994). Whereas, Pearce and Ensley, (2004) examined the teams that implemented innovation and the existence of a reciprocal relationship between a shared vision and innovation, as the initial innovative success was reflected in the shared vision. Based on these arguments, we make the following hypothesis:

H1.3: There is a positive relationship between cognitive social capital and innovation.

2.1.4 Interdependence between Dimensions

Most of the dimensions have been considered and differentiated between them since (Nahapiet and Ghoshal, 1998), but when we start looking at them together and the relationships between them and how they are related more, we find benefits emerging, especially when studying their relationship with innovation.

Moran, 2005; Smith, (2005) provided a link between structural and relational dimensions, it was found that the two dimensions support each other, contributing to the promotion of innovation because when trust and norms increase, interactivity and time spent between an individual and his network of relationships increases (Bettenhausen and Murnighan, 1985; Granovetter, 1977; Tsai and Ghoshal, 1998). This interactivity makes the relationships stronger and opens new opportunities that increase innovation (Ring and Van de Ven, 1992).

When merging the cognitive dimension with the structural and relational dimensions, we will not find much support in the literature (Tsai and Ghoshal, 1998), but rather we will find a confusion between the cognitive and relational dimensions as they were dealt with sometimes as one entity (Chou, 2006; Grootaert, Narayan, Jones, and Woolcock, 2004; Krishna and Shrader, 1999; Uphoff, 2000; Van Bastelaer, 1999). A study (Tsai and Ghoshal, 1998) showed that there is no relationship between the cognitive dimension and the structural dimension when the relational dimension was controlled. And we can find "norms" and "shared cognition" in the relational dimension

similar to "common goals " and "shared vision" In the cognitive dimension (Reilly, 1989).

It should be noted here that the current empirical literature is geared towards searching for evidence of the relationship of the dimensions of social capital to innovation. For example, Kim and Shim, (2018) in their study applied social capital theory to small and medium enterprises in Bomun tourism group in South Korea, the aim was to determine the structural relationship between social capital, knowledge sharing, and innovation. It focused on bridging the gap of the role of the cognitive dimension in influencing innovation, showing the importance of strong social network density in promoting cooperation, knowledge sharing, and information transfer, which are reflected positively on innovation. The results also showed the importance of the relational dimension, because mutual trust relationships are focused on the type of knowledge and the exchange of resources that contribute to innovation. On the other hand, the results showed that the network's centralization was not statistically significant in facilitating knowledge sharing, as knowledge sharing does not increase business performance and leads to the absence of innovation. Finally, it is necessary to enhance social capital in order to increase the value of cooperative innovation and to educate small and medium-sized companies to use the cluster as a resource to develop their innovative capabilities.

In the same context, Dato-on, Banerjee, and Roy, (2018) discussed empirically the role of social capital, specifically the role of the network in supporting innovation and the performance of 100 companies in West Bengal, India, between small companies with strategic and social alliances and comparing them with small companies with social alliances only, using multiple regression analysis. The results showed that the common vision among the members of the associations that support businesses (strategic alliances) has a positive effect in supporting innovation and improving the performance of companies more than social associations, and this effect appears on the company's performance and on innovation as a benefit from social capital through the various relationships within the network that provides more communication, information, knowledge resources, and support to encourage innovation. Here, the importance of strategic alliances in comparison to direct informal social ties appears.

The study of Bonfim, Segatto, and Takahashi, (2018) is a meta-synthesis study, aiming at clarifying the direct impact of the dimensions of social capital on innovation and technology in inter-organizational and intra-organizational settings in small and medium-sized European companies, reducing barriers to innovation and enhancing facilitating factors for innovation outcomes. The results indicated that the role of social capital dimensions on innovation differs according to the level of relationship analysed. So that the influence of the relational dimension is prominent compared to the structural and cognitive dimensions at the level of inter-organizational networks, while the role of the relational dimension is essential in the environments within the organization compared to the secondary role of the structural and cognitive dimensions. It also indicated the negative effects of social capital, such as the negative impact of increasing confidence in innovation.

Laužikas and Dailydaitė, (2015) is one of the first ones focusing on identifying and explaining the effects of the three-dimensional effects of social capital on aspects of the transition from efficiency to innovation. and the results show the importance of focusing on social capital properly by assisting businessmen in accessing resources and new information that usually spread between direct and indirect market participants, which lead to a better understanding of the market and capabilities and turning them into innovations. Consequently, companies with a stock of social capital always enjoy a competitive advantage from reliable information. Social capital acts as a major component of the shift from efficiency to innovation-driven businesses by creating competitive advantages for companies, especially small and medium-sized businesses, which are the driving force of economies that must be taken into consideration.

The study of Iturrioz, Aragón, and Narvaiza, (2015) explains the importance of understanding and applying the dimensions of social capital (relational, structural and cognitive) in developing the dynamics of sustainable shared innovation in a specific social context in the network of small and medium companies. The results present the importance of the leadership role of dependent intermediaries to extract the value of social resources to enhance shared innovation strategies between small and medium companies in the academic field and the practical arena by nurturing network innovation through individual innovation.

On the other hand, Li, Zhang, and Zheng, (2016) examined the impact of the external social capital of companies on their exploration innovations by clarifying the effects associated with the three dimensions of social capital with key partners on exploratory innovation in a holistic model, where the positive effects and mitigating the negative effects of social capital can be enhanced through the ability to manage portfolios. The results show that social capital is a double-edged sword in nature and it is necessary to balance between the positive effects and dark side of social capital effects, without forgetting the risk-taking from limitations of social capital on the innovation.

Tan, Zhang, and Wang, (2015) studied how to mitigate the negative impact of social capital at the company level by studying the conditional effects of collective social capital. This is done by measuring the degree of network density, which is the measure of social capital at the network level. the results clear that low-density networks (central degrees and structural gaps) reduce the negative impact of social capital and promote innovation and vice versa clear (Beltramino, N.S., García-Perez-de-Lema, D. and Valdez-Juárez, L.E., 2020). The results that were conducted on a sample of 259 small and medium industrial companies from the province of Cordoba, Argentina, show. The structural dimension has positive and significant impacts on the innovation capacity in operations and performance of SMEs.

2.2 Social Capital and Entrepreneurial Orientation

Large and international companies garnered a lot of attention because they were considered the core of economic development and economic progress, while entrepreneurs and emerging companies got little attention, especially in the 1960s (Subrahmanya, 2017; Volkmann, 2018; Casson, 2015). That changed when Asian goods began to invade the market at low cost and high quality, then some specialists began to establish small specialized companies that provide services similar to those of large companies, but for better prices and high quality.

It was the first appearance of the concept of entrepreneurship in the literature of Richard Cantillon in 1755, who is considered the founder of entrepreneurship theory (Kruger, 2004; Landström, 2005). Schumpeter (2003) since 1911 has linked entrepreneurship directly to economic growth and described "entrepreneurs" as "innovators" (Mohanty, 2006). His definition showed the difference between projects

that depend on innovation and projects that depend on imitation. He defined entrepreneurship as activities created by leadership initiatives and not conducted on a daily basis (Schumpeter, 1951).

Entrepreneurial orientation attracted great attention from researchers and academia (Martin and Javalgi, 2016) as an important construct in the entrepreneurship literature, because it expresses the exploitation of emerging opportunities and promotes the competitive excellence of organizations (Wales, 2016). “Entrepreneurial orientation exists in companies where strategic leaders and culture together generate a strong impulse to innovate, take risks and pursue new enterprise opportunities” (Dess and Lumpkin, 2005, p. 147). It is defined as that the company's ability to solve problems arising from risks in external environmental changes in order to develop the company through the acquisition of resources and opportunities for technology development and recognition (Gao et al., 2018) and a tendency by firms or individuals towards innovative, proactive, and risk-taking behaviours (Bolton and Lane, 2012; Covin et al., 2020; Kraus et al., 2019; Martins and Perez, 2020).

As proposed in the literature, entrepreneurial orientation (EO) is a multi-dimensional building, that includes (i) innovation capacity, (ii) risk-taking, and (iii) proactive researchers (Gao et al., 2018; Khan et al., 2020; Lumpkin and Dess, 2015; Fairoz et al., 2010). This three-dimensional model is the most cited model in the prevailing literature in EO (Yousaf and Majid, 2018). There are other models (Lumpkin and Dess, 2015) that add competitive aggressiveness and the five dimensions model which adds organizational autonomy to the other dimensions that we mentioned above (Gao et al., 2018). The three dimensions can be explained as follow.

Innovation capacity reflects the capability to take on a leading approach to try new ideas and depart from the tried and tested in favor of seeking new ways of doing things (Amankwah-Amoah, Danso, and Adomako, 2019; Covin and Slevin, 1989; Lumpkin and Dess, 1996). Risk-taking is a firm's ability to deal with strategically considering the business-related opportunities in uncertain situations (Song et al., 2010; Amankwah-Amoah, Danso, and Adomako, 2019; Covin and Slevin, 1989; Lumpkin and Dess, 1996). Proactive is the firm's tendency to be the first mover while introducing new products and services depending on the demands of markets (Martin and Javalgi, 2016), and the ability to anticipate business opportunities and the external environmental

variables that may have an impact on firm performance (Amankwah-Amoah, Danso, and Adomako, 2019; Covin and Slevin, 1989; Lumpkin and Dess, 1996; Wang and Altinay, 2012). Firms need to risk proactively in order to remain competitive as risk generates the acquisition of new knowledge which increases benefits (Martin and Javalgi, 2016; Song et al., 2010).

It is agreed that entrepreneurship is inseparable from social relationships (Lefebvre, Radu Lefebvre, and Simon, 2015; Nijkamp, 2003; Stuart and Sorenson, 2005) because entrepreneurs depend on their success a set of factors and skills, including social skills (Baron Markman, 2000). So, social capital helps discover the paths of joint action in order to create innovation, develop skills, and take risks, so the organization with higher social capital has higher organizational independence, innovation, proactivity, and higher risk-taking capabilities (Van Doorn et al., 2017).

This aspect justifies the emergence of social capital and entrepreneurship in the literature in recent decades (Hernandez-Carrion et al., 2020; Tok and Kaminski, 2019; Garcıa-Villaverde et al., 2018; Sahasranamam and Nandakumar, 2020; Casson and Della Giusta, 2007; Light and Dana, 2013; Ramadani and Dana, 2013), and entrepreneurial orientation approach as well (M. A. Khan, Rathore, and Sial, 2020)

(Masa'deh et al., 2018; Basco et al., 2020; Hunt, 2021; Jiang et al., 2018; Kollmann et al., 2019), because it is not possible to improve the company's performance and benefit from its entrepreneurial orientation when there is a shortage of social capital (Covin and Wales, 2012).

However, it should be noted that a lot of the studies that dealt with the topic of social capital and entrepreneurship have not studied the subject sufficiently and the gap in this area cannot be ignored (Audretsch et al. 2006; Gailey, 2010). As there is a consensus in academia that the systematic nature of the entrepreneurial activity is still underdeveloped and needs to be expanded (Acs, Audretsch, Lehmann, and Licht, 2016; Alvedalen and Boschma 2017).

The rates of entrepreneurship differ between countries and regions depending on many factors, including the degree of education, production costs, and the consumption market (Glaeser, 2007). Often empirical studies focus on specific countries or use specific dimensions, so their results cannot be generalized (Light and Dana 2013; Puffer

et al. 2009; Meek et al. 2009; Martez and Rodriguez 2004; Westlund et al. 2014; Percoco, M. 2012), or ignore the stages of the entrepreneurship process and focus on the individual perspective (Arenius and Clercq 2005; Davidson and Honig 2003; Shane and Cable 2002; Johannisson and Ramirez-Pasillas 2001).

Due to individuals' need for resources and contacts varies according to the stages of the entrepreneurship process. (Greve and Salaff 2003). The first stages of entrepreneurship are often within a circle of small, personal relationships that can be trusted (Butler and Hansen 1991; Batjargal 2003; Jack 2005). In the following stages, the circle of resources and relationships broadens, especially those that are believed to be of benefit in the future, and networks become more business-oriented (Greve and Salaff 2003; Nikolova and Simroth 2013; Butler and Hansen 1991). And the advanced stages, the circle of relationships returns to become smaller, but it is characterized by selectivity and is focused on the parties which have been proven through experience to be useful and trustworthy. Trust reduces monitoring costs, increases time and money devoted to developing innovative activities (Kaasa, 2009), and improves proactivity by integrating new insights with existing knowledge (Shane, 2000), and improves the likelihood “of taking risky actions ahead of competitors” (Rodrigo-Alarcon et al., 2018, p. 198)

We notice from the text above that trust (relational dimension) is one of the most important factors affecting the decision to start an entrepreneurial business (Welter F, 2012) because it is the basis on which (builds, develops, and maintains) the communication networks essential to doing business (Kim P., Aldrich H, 2005). Trust reduces transaction cost (Luhmann, 2000), risk-taking and uncertainty (Knack S., Keefer P, 1997), feedback reinforces (Greve 1995). On the other hand, the negative impact of trust is possible, especially when the entrepreneur's interest is shifted to maintaining good relationships rather than productivity (Kautonen T., Zolin R., Kuckertz A., Viljamaa A, 2010). So, we hypothesize:

H2.1: there is a positive relationship between relational dimension and entrepreneurial orientation

The perception of entrepreneurship as an individual business was characterized by personality but evidence indicates that it is embedded in social networking structures (Johannison, 1988). Many studies have emphasized the importance of networks and

their impact on the creation and growth of entrepreneurial businesses (Hoang and Antoncic, 2003) in providing information, opportunities and funding sources.

As it helps, as a formal and informal network, in securing investment capital and increases the chances of willingness to invest in the future and reach current investment goals (Alexy, Block, Sandner, and Wal, 2012). Here also we notice the importance of the stages in determining the impact of networks on entrepreneurship, as the first stages involve personal networks and then become more business-oriented (Butler and Hansen, 1991).

The literature mentioned that the networks must be dense enough to create resources from strong ties and trust. However, the networks must not be so cohesive as to diminish their primary attributes' manifestation (Smith et al., 2017; Rodrigo-Alarcon et al., 2018; Bucholtz, 2019), due to the redundancy of information and the difficulty of getting new information, and this limits the discovery of new opportunities and promotes conservative behaviours that conflict with the essence of entrepreneurial orientation. Furthermore, extreme structural cohesion could generate other little-explored related effects, such as decreased objectivity (Garcıa-Villaverde et al., 2018), rising transaction costs (Smith et al., 2017).

Gedajlovic et al. (2013) mentioned the negative impact of networks due to the costs of establishing and managing relationships, and networks may contribute to the spread of monopolies and corruption (Riordion 2004). But it cannot be ignored that most of these studies focused on one industry (Schilling and Phelps, 2007), which is manufacturing. So,

H2.2: there is a positive relationship between structural dimension and entrepreneurial orientation

By focusing on the cognitive dimension, we notice that studies that discuss this dimension of capital are rare, especially experimental ones, but there is near agreement among scholars that the effect of social norms is positive towards entrepreneurship (Gedajlovic et al. 2013; Davidson and Wiklund 1997; Giannetti and Simonov 2004).

Fischer and Nijkamp (2009) argue that although the links are unclear, the cultural factor, common values, and standards play a role in the disparity in the rates of entrepreneurship between regions and countries. Perhaps the complex nature of

standards is one of the reasons for the limited number of studies dealing with the impact of the cognitive dimension, but common values and standards are a double-edged sword.

Some have found that there is no evidence to prove the existence of any relationship between shared values and standards and the intention to start an entrepreneurial business (Krueger et al. 2000), maybe because this dimension has been the least analysed in the literature (García-Villaverde et al. 2018). However, there are those who have argued that it may have a positive effect by accessing tacit knowledge and exploiting it which allows the company to outperform its competitors (Rodrigo-Alarcón, J., Parra-Requena, G. and Ruiz-Ortega, M.J., 2020), and in improving professional competence and restraining excessive opportunism (Knack and Keefer 1997), and increase in standards, goals, and a shared culture increases the actors 'interpretation of information better, and this increases the chances of being proactive in investing this information in entrepreneurial activities (Doh and Acs, 2010). Networks with a high cognitive dimension are characterized by their utilization of third-party information and resources and gathering information from inside and outside the network gives the courage to take the greater risk-taking (Iturrioz, Aragon and Narvaiza, 2015).

On the other hand, it may be negative because it imposes strict restrictions on the freedom of individuals with regard to acting opportunistically towards available opportunities, which contradicts the social norms of society (Coleman 1990). But it cannot be ignored that entrepreneurial work requires specific knowledge. The type and importance of this knowledge may only be understood by the entrepreneur. This is what Casson (1982) expressed when he described the entrepreneur as a person capable of making judicial decisions that reflect his narrative of seeing opportunities when others see the danger. Our last hypothesis is:

H2.3: there is a positive relationship between the cognitive dimension and entrepreneurial orientation

3 Method

This is descriptive research, with a quantitative approach and cross-section data. Text about data (3.2), population and samples (3.3) and data collection tool (3.4) were based on the original by Cardoso (2015).

3.1 Model and description

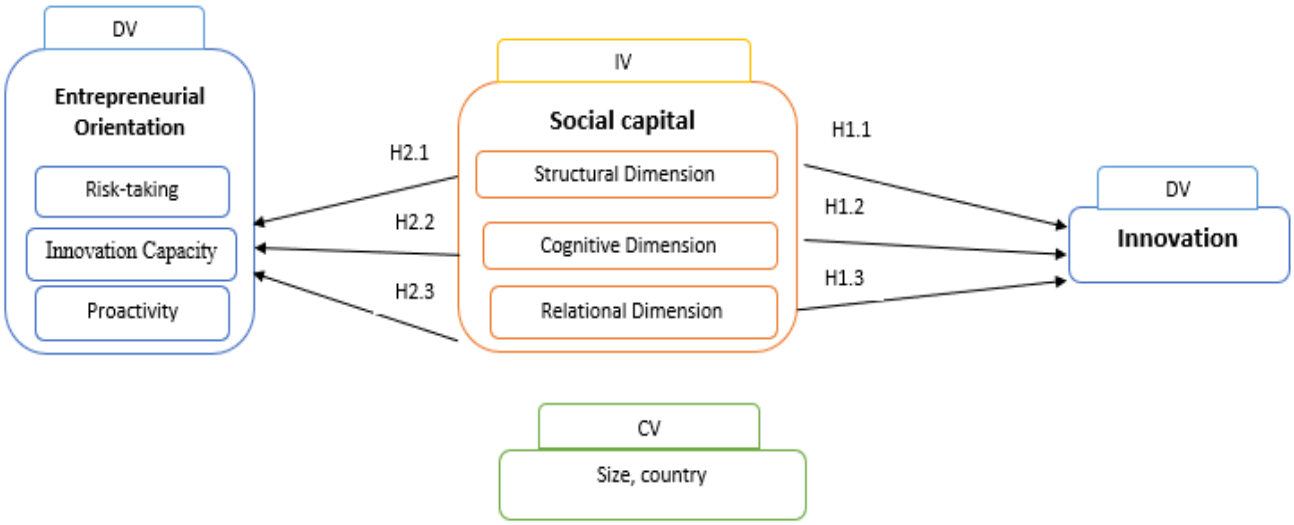

Figure 1. The study model

Figure 1 illustrates the model of this study. It explains the relationship between independent variables (IV), which are the three dimensions of social capital (structural, relational, cognitive), and their effect on dependent variables (DV), which are innovation and Entrepreneurial orientation, (CV) control variables, which are country (Spain or Brazil) and company size based on company number of employees.

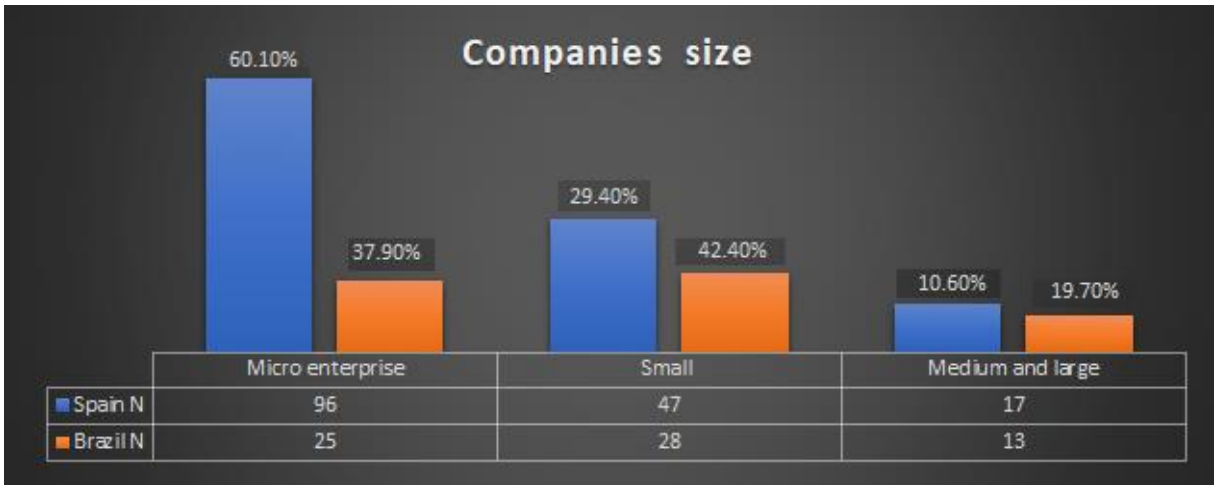

Figure 2 companies' size

Figure 2 shows the data for the control variable, the size of the firm, which is measured by the number of employees. The European Union recommends a classification in which up to 9 employees are considered small enterprises, from 10 to 49 small companies, from 50 to 249 employees, medium-sized companies and over 249, large companies (Commission Recommendation 2003/361 / EC, 2003).

3.2 Data

In this thesis, we used secondary data collected and used in a Ph.D. thesis for a student at the University of Brasilia that he presented in the year 2015 titled "Social Capital, Innovation and Spin-offs in Clusters. A Study on the Impact of the Structure and Nature of Social Capital in the Information Technology Sector in Brazil and Spain" (Cardoso, 2015). The objective of his study was to determine how the convergence between business organizations enhances the intensity of relationships and facilitates the exchange of information and knowledge in the relationship between organizations between the parent and spin-off companies.

3.3 Population and sample

We used the same data Cardoso (2015) collected from Brazil and from Spain. The Ministry of Development, Industry and Foreign Trade - Brazilian Observatory of Local Productive Arrangements, considers that the Santa Catarina Information and Communications Technology Industry is a single region that includes many cities of social and economic areas such as Blumenau, Brusque, Chapecó, Criciúma, Jaraguá do Sul, Joinville, Lages, Palhoça, Penha, and São José, considering Florianópolis as a hub (Figure 3).

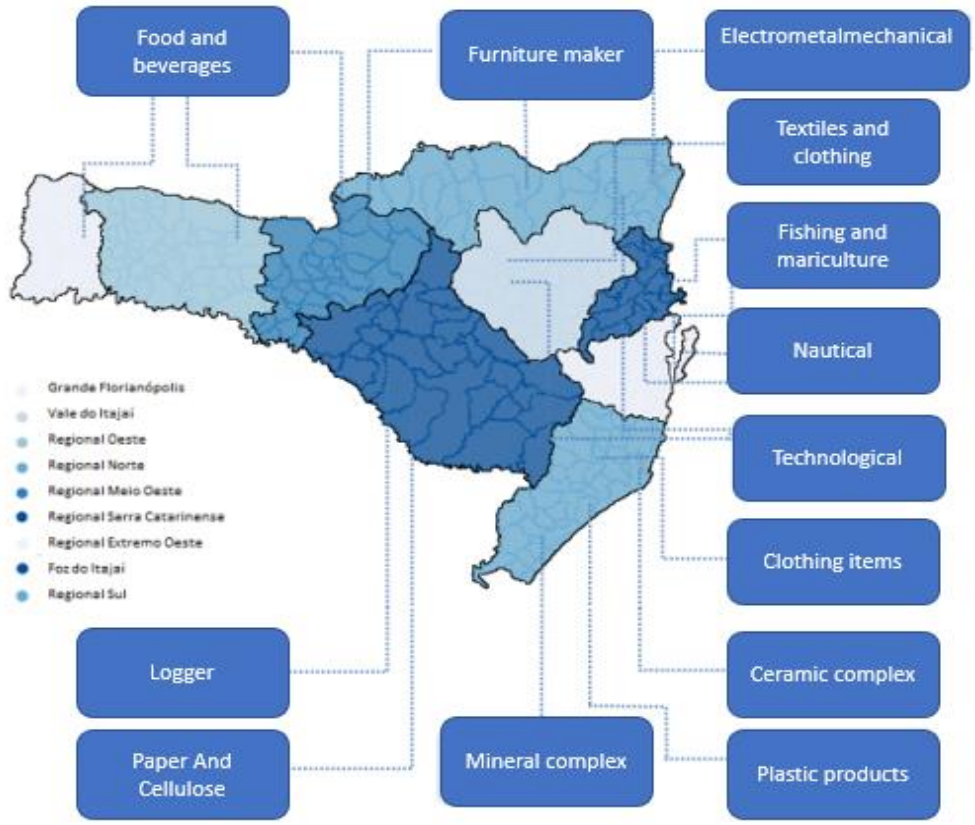

Figure 3 Santa Catarina territory according to the territorial division and the main productive clusters with representativeness of the Gross Value Added of Santa Catarina.

Source: SEBRAE / SC (2013).

In that study, some of the most important cities have been chosen from the list before in order to obtain the largest possible: the metropolitan area of Florianópolis, Joinville, and the metropolitan area of Blumenau. Cardoso (2015) also justified his selection using the main corporate associations in the Santa Catarina ICT industry place are justified by ACATE (Florianópolis), SOFTVILLE (Joinville), and BLUSOFT (Blumenau). According to FIESC (2013), in Santa Catarina there were 1,800 ICT companies. Using data from official sites (Table 1), we estimated a population of 560 companies (Table 2).

Data from Spain was collected in the Barcelona area. According to Ayuntamento de Barcelona (2014c), 102,500 companies are installed at 22 @ Barcelona, one of the hubs of ICT industry in Barcelona province. There are different places where this industry is located in that region, as follow: 22 @ Barcelona, Parc Tecnòlogic del Vallès, Esadecreapolis, BarcelonaTech, Fundació b_Tec, Orbital 40, Parc Científic de

Barcelona, Parc de Recerca UAB, Parque Tecnológico TecnoCampus, Technova Barcelona.

Therefore, it estimated 2000 companies in the Barcelona ICT Industry based on the number of companies that each axis reports on its webpages or in its annual reports. Cardoso (2015) created a register with 540 companies in the Barcelona ICT industry companies. According to these numbers, samples were taken (Table 2).

Table 1 Corporate Associations

Corporate Association	Web site
Brazil	
ABES - Associação Brasileira das Empresas de Software	www.abessoftware.com.br
ASSESPRO - Associação das Empresas de Serviços de Procesamento de dados - SANTA CATARINA	www.assespro.org.br/institucional/regional/santa-catarina/
ACATE – Associação Catarinense de Empresas de Tecnologia	www.acate.com.br
Blusoft - Polo Tecnológico de Informação e Comunicação da Região de Blumenau	www.blusoft.org.br
Fundação Softville	www.softville.org.br
Oficina da Net	www.oficinadanet.com.br
Spain	
AMETIC – Associação de Empresas de Eletrônica, Tecnologia da Informação, Telecomunicação e Conteúdos Digitais	www.ametic.es/es
22@Barcelona	www.22barcelona.com
ACCIÓ - agência para a competitividade das empresas do Governo da Catalunha	www.accio.gencat.cat/cat/index.jsp
BDigital -Barcelona Digital Centro Tecnológico	www.bdigital.org
CTECNO - Cercle Tecnològic de Catalunya	www.ctecno.net
APTE - Asssociação de Parques Científicos e Tecnológicos da Espanha	www.apte.org/es

Source: Cardoso (2015, p.130)

Table 2 Population and sample.

Country	Population	Sample	%
Brazil	560	66	11.79
Spain	540	160	29.63
Amount	1,100	226	20.5

Source: from data by Cardoso (2015)

Cardoso (2015) accessed companies using a survey i) with an electronic form, (Brazil and Spain); ii) phone calling (Brazil and Spain); and face-to-face interviews (Brazil). So, we can say this is a non-probabilistic sample, or convenience sample for access. even though (Babbie, 2003) recommended it is recommended to take

probabilistic samples, but in some cases, non-probabilistic sampling is necessary and can be used effectively. When the characteristics of the research population are related to the survey statistics, the non-probabilistic sample results are similar to the sample results for overpopulation (Groves et al., 2004). Usually, sample size larger than 30 and less than 500 is appropriate for most research (Sekaran and Bougie, 2016).

3.4 Data Collection Tool

The data collection was carried out in two phases. The first in the ICT group in Spain and the second in the ICT group in Brazil. Quantitative data were collected from primary origin through a structured questionnaire divided into 8 sections, we will use 7 sections in our research.

Company data deals with control or classification variables with open objective questions, some of which use a seven-point Likert scale, where "1" indicates complete difference and "7" indicates full agreement.

Section 1: firm's data and control variables.

This section includes open questions explaining the firms' names and addresses and in which country they are, the firms' contact information, the country, the size based on the number of its employees, it is evident from the existing literature that a firm's size can influence firms' innovation and transformation, and they are frequently utilized as control variables (Galbreath and Galvin, 2008). So, countries and firm size are taken as control variables.

Section 2: (structural dimension).

The questions of this section represent the structural dimension, which is the first independent variable, and it contains 4 questions that use 7 Likert scales, expressing the network of relationships in the cluster, by measuring the degree of frequency and exchange of content, the degree of knowledge, depending on the network for resources.

Section 3: (Relational Dimension).

The questions in this section represent the first part of the relational dimension, which is the second independent variable. It contains 4 questions that use 7 Likert scales, which explain the strength of corporate communications in the network, the number of times of contact, the degree of commitment to the relationship, the strength of the links within the group.

Section 4: (cognitive Dimension)

The questions in this section represent the cognitive dimension, which is the third independent variable. It contains 4 questions that use 7 Likert scales, and it represents the effect of the information exchanged in the network in solving problems and improving decision-making and the validity of the information and the implicit knowledge.

Section 5: (Relational Dimension)

This second section that represents the relational dimension, contains 4 questions that use 7 Likert scales, explaining the degree of trust and reputation, reciprocity, and friendly conflict resolution.

Section 6: Innovation

The questions in this section represent the first dependent variable, which is innovation, and it contains 13 questions, which can be divided into two parts:

a) **7 objective questions:**

All are open questions except one question follows 7 Likert scales. These questions include determining the number of patents and quality certificates the company has, the number of innovation contracts, the number of new products and new technologies.

b) 6 personal questions:

This section was not used in our research.

Section 7: Commitment to Local Institutions.

This section was not used in our research.

Section 8: Entrepreneurial Orientation:

The questions in this section represent the second dependent variable, entrepreneurial orientation, and it contains 14 questions, which divided into 3 sections, all using 7 Likert scales:

a) (innovation capacity)

It includes 6 questions, expressing the ability to innovate, the field of development, availability of human resources for innovation, support for new ideas and experiences.

b) (Risk-taking)

It includes 4 questions, explaining the degree of risk-taking in the company's decisions, whether in entering new markets or new, administrative or financial procedures.

c) (proactivity)

It includes 4 questions, initiative in tracking environmental changes and customer needs, rapid adjustments to the introduction of new products and services.

Questionnaires (Attach file 1 – original Spanish version) were sent via e-mail explaining the objectives of the research and ensuring that the identity of the respondent and instructions to fill out the questionnaire were not disclosed to business owners/managers of companies in the research community. This is in order to evaluate the survey instrument in the ICT groups that were not part of the survey sample.

3.4.1 Data collection in Spain

The experimental test was conducted with companies from Valencia Province, in the Valencia Community area, a group that does not belong to the main survey sample. With this step it was possible to fit the survey form.

An electronic resource was used through Google Docs, companies responded to the questionnaire without making any proposals, but the result was positive, so the same strategy was used with the final questionnaire, which was sent to 540 companies registered in Barcelona.

But a month passed without receiving any answer. A company specialized in academic research was assigned to collect data in Barcelona. Who submitted the questionnaire and cover letter via email and then set to conduct phone interviews?

Surveying and contacting all of the registered companies were completed within thirty-five days, and we got a response from 160 registered companies (return rate of 29.63%).

In addition, the final sample showed a balanced distribution with the presence of companies of various sizes, ages, legal forms etc.

3.4.2 Data collection in Brazil

As with the Spain group, prior to the survey, a questionnaire was conducted with five information and communications technology companies from Santa Catarina, not from the main survey sample. With Google Docs, a month later four experimental questionnaires were received without suggestions.

The final survey was remotely sent via Google Docs to 560 companies registered in Santa Catarina. A month later, 6 questionnaires were answered, so a professional research academic was hired to conduct data collection in Santa Catarina - Brazil.

Where the cover letter was sent by email and then called to set an appointment for the telephone interviews, the survey period was a month, during which 300 companies were contacted, and responses were received from only 21 companies.

Due to the small number of retrieved questionnaires, the data collection strategy was changed to personal interviews, direct interviews lasted for 20 days, during which 39 companies were interviewed.

Thus, among the 560 companies registered, 66 companies responded to the questionnaire in the total survey, achieving a response rate of 11.79%.

With the addition of surveys conducted in both countries, the record of 1100 companies answered 226 questionnaires, at a rate of 20.55% 9Table 3.2) of the questionnaire returns, this result is considered accepTable, exceeding 15%.

3.5 Measures

We used the following statistical methods, relying on (SPSS) version 25 to analyze the data:

1) Validity and reliability: Alpha Cronbach coefficient.
2) Descriptive statistics: to describe the sample and its characteristics, to know the percentages and frequencies of the demographic variables, and to know the mean and standard deviation of the variables included in the tests, missing data, and outliers.
3) Normal distribution test: Kolmogorov-Smirnov test.
4) Factor analysis.
5) Correlation: Spearman test, Linearity Test

6) regression: simple and multiple linear regression test.
6) Quadratic relationship between the dimensions of social capital, innovation, and entrepreneurial orientation.
7) Difference tests: T-test, Mann-Whitney

3.5.1 Validity and reliability of the study instrument

The study relied on the measurement tool on the apparent validity to ensure the validity of the questionnaire, regard to the reliability of the questionnaire, the Cronbach's alpha coefficient was used (Table 3) for consistency of each item in the variables. Values of Cronbach's alpha above 0.7 is acceptable, however, a value above 0.8 is preferable (Pallant, 2011).

Table 3 Alpha Cronbach coefficient to study the stability of the questionnaire and its interlocutors

	Number of questions	Cronbach's alpha	alpha
Social capital total	16	0.916	0.957
Structural dimension	4	0.859	0.927
Relational dimension	8	0.814	0.902
Cognitive dimension	4	0.892	0.944
Innovation	7	-	-
entrepreneurial orientation	14	0.870	0.933
Innovate capacity	6	0.873	0.934
Risk-taking	4	0.860	0.927
Proactive	4	0.691	0.831
Total	36	0.911	0.954

Table 3 shows, the parameter values ranged between 0.691 and 0.916, all of which were greater than 0.60. The value of the coefficient as a whole was 0.911, meaning that the questionnaire has excellent reliability. As for the values of the validity factor of the questionnaire as a whole 0.954, we notice that the values are also high, which means that the questionnaire is valid and representative of the community from which the sample was drawn, the good design of the questionnaire's questions and the correct distribution of them to individuals of a genuinely representative community. The

innovation cannot be studied for honesty and reliability, since the answers in this section do not follow the Likert scale of seven.

3.5.2 Descriptive statistics

Initial data screening occurred in two stages. In the first one, we dealt with missing values. In the second one, we carried out analyses to search for and deal with outliers.

Table 4 Missing-Cases Analysis per Variable

Item	Missing		Item	Missing	
	n	%		*n*	%
P2_1	2	0.9	P6_4	32	14.2
P2_2	1	0.4	P6_5	25	11.1
P2_3	1	0.4	P6_6	14	6.2
P2_4	1	0.4	P6_7	6	2.7
P3_1	0	0.0	P8_1	0	0.0
P3_2	0	0.0	P8_2	2	0.9
P3_3	0	0.0	P8_3	4	1.8
P3_4	0	0.0	P8_4	0	0.0
P4_1	0	0.0	P8_5	2	0.9
P4_2	1	0.4	P8_6	0	0.0
P4_3	0	0.0	P8_7	2	0.9
P4_4	0	0.0	P8_8	4	1.8
P5_1	0	0.0	P8_9	6	2.7
P5_2	1	0.4	P8_10	5	2.2
P5_3	3	1.3	P8_11	0	0.0
P5_4	4	1.8	P8_12	1	0.4
P6_1	22	9.7	P8_13	3	1.3
P6_2	25	11.1	P8_14	1	0.4
P6_3	19	8.4			

Note. Total *N* = 226.

Table 4 shows the missing-cases analysis, we checked the number of missing values for each variable in our data. Table 4 shows the number and percent of organizations that omitted responses for each item. Missing values ranged from 0 to 14.3% across variables; only three of them had more than 10% of missing values (P6_2, P6_4, and P6_5). Due to the low number of missing values per variable, we chose to use the expectation–maximization (EM) algorithm to deal with missing values. The EM algorithm consists of a computational and iterative process that seeks to estimate optimal values for missing values based on known values for all cases contained in the

database (Vinha and Laros, 2018). In a simulation study, (Vinha and Laros, 2018)found that the EM algorithm performs better than other imputation methods, such as the well-known replace-by-mean method.

Table 5 presents descriptive statistics for all items from questionnaires, after the implementation of the EM algorithm. As can be seen in Table 5, most of the variables had negative skewness, means of items suggest that responses tended to stay above the midpoint of the Likert scale (i.e., most of the means were above 4).

Table 5 Descriptive Statistics for All Items, After the Implementation of the EM Algorithm

Item	Descriptive statistics					Skewness			Kurtosis		
	N	*Min*	*Max*	*M*	*SD*	*S*	*SE*	*S / SE*	*K*	*SE*	*K / SE*
P2_1	226	1	7	4.25	1.75	–0.27	0.16	–1.69	–0.94	0.32	–2.91
P2_2	226	1	7	4.64	1.823	–0.46	0.16	–2.84	–0.96	0.32	–2.97
P2_3	226	1	7	4.44	1.722	–0.28	0.16	–1.73	–0.91	0.32	–2.82
P2_4	226	1	7	4.46	1.652	–0.34	0.16	–2.12	–0.82	0.32	–2.54
P3_1	226	1	7	5.27	1.561	–1.09	0.16	–6.71	0.58	0.32	1.80
P3_2	226	1	7	4.82	1.724	–0.57	0.16	–3.51	–0.72	0.32	–2.23
P3_3	226	1	7	4.69	1.666	–0.63	0.16	–3.91	–0.31	0.32	–0.97
P3_4	226	1	7	3.27	2.134	0.43	0.16	2.63	–1.22	0.32	–3.79
P4_1	226	1	7	4.47	1.687	–0.37	0.16	–2.31	–0.90	0.32	–2.78
P4_2	226	1	7	4.35	1.73	–0.31	0.16	–1.93	–1.00	0.32	–3.11
P4_3	226	1	7	4.49	1.682	–0.35	0.16	–2.16	–0.79	0.32	–2.46
P4_4	226	1	7	4.40	1.843	–0.29	0.16	–1.79	–1.19	0.32	–3.70
P5_1	226	1	7	5.58	1.377	–1.37	0.16	–8.47	1.88	0.32	5.84
P5_2	226	1	7	5.1	1.646	–0.85	0.16	–5.26	–0.17	0.32	–0.51
P5_3	226	1	7	5.76	1.193	–1.69	0.16	–10.43	3.80	0.32	11.77
P5_4	226	1	7	5.72	1.296	–1.79	0.16	–11.03	4.09	0.32	12.69
P6_1	226	0	500	4.31	33.80	14.18	0.16	87.59	208.25	0.32	646.01
P6_2	226	0	1000	8.45	67.58	14.19	0.16	87.66	208.48	0.32	646.72
P6_3	226	0	60000	438.94	4050.48	14.32	0.16	88.45	210.52	0.32	653.05
P6_4	226	0	1000	19.02	91.60	8.75	0.16	54.05	82.92	0.32	257.21
P6_5	226	0	250	6.77	18.52	10.51	0.16	64.94	133.61	0.32	414.49
P6_6	226	0	19	1.43	2.18	3.48	0.16	21.49	20.46	0.32	63.48
P6_7	226	1	7	3.52	1.93	0.13	0.16	0.82	–1.13	0.32	–3.51
P8_1	226	1	7	5.23	1.53	–0.93	0.16	–5.78	0.12	0.32	0.36
P8_2	226	1	7	4.71	1.607	–0.49	0.16	–3.02	–0.69	0.32	–2.13

P8_3	226	1	7	5.02	1.524	–0.79	0.16	–4.86	–0.07	0.32	–0.22
P8_4	226	1	7	5.44	1.356	–0.96	0.16	–5.95	0.33	0.32	1.02
P8_5	226	1	7	5.52	1.278	–1.08	0.16	–6.66	0.82	0.32	2.54
P8_6	226	1	7	5.08	1.537	–0.74	0.16	–4.54	–0.16	0.32	–0.50
P8_7	226	1	7	4.01	1.614	0.04	0.16	0.22	–0.90	0.32	–2.78
P8_8	226	1	7	4.26	1.629	–0.21	0.16	–1.29	–0.78	0.32	–2.42
P8_9	226	1	7	3.48	1.673	0.31	0.16	1.93	–0.77	0.32	–2.38
P8_10	226	1	7	3.95	1.498	0.10	0.16	0.62	–0.66	0.32	–2.04
P8_11	226	1	7	4.51	1.705	–0.26	0.16	–1.60	–1.04	0.32	–3.23
P8_12	226	1	7	4.79	1.472	–0.43	0.16	–2.63	–0.57	0.32	–1.76
P8_13	226	1	7	3.95	1.897	–0.03	0.16	–0.17	–1.27	0.32	–3.92
P8_14	226	1	7	5.04	1.413	–0.68	0.16	–4.21	0.13	0.32	0.42

Note. Item P1_1: Barcelona = 160 cases (70.8%) e Santa Catarina = 66 cases (29.2%).

Present the data presented in Table 5. The confidence interval is the estimated time interval where the mean of the sample parameter has a certain probability of occurring, the center of the scale from 1 to 7 was used as a reference, that is, the value 4 (Kline, 2011). It can be seen that most of the variables have averages greater than 4, approaching the maximum scale value. There are also some variables that have averages less than 4, but despite being less than 4, it is close to it (Molina-Morales and Martínez-Fernández, 2008).

Standard deviation (SD) indicates the fit of the data to the model; in other words, it is the measure of dispersion (Cooper, Schindler, and Sun, 2006), and shows how well the mean representing the data is. If the SD is small in relation to the mean, this indicates that the data points are close to the mean (low dispersion). If the SD is large, then this means that the data points are far from the mean, showing that the mean is not an accurate representation of the data (high dispersion). From Table 5, it can be seen that the standard deviation is greater than the mean in most of the variables and this indicates that the variables are dispersed around the mean, the exception was in the innovation section (P-1 to P-7) because this section of the questionnaire was an open question.

Table 6 Minimum and Maximum Values for All Items in Standardized Units

Item	*Min*	*Max*	Item	*Min*	*Max*
P2_1	–1.86	1.58	P6_4	–0.21	**10.71**
P2_2	–1.99	1.30	P6_5	–0.37	**13.13**
P2_3	–1.99	1.49	P6_6	–0.65	**8.06**
P2_4	–2.09	1.54	P6_7	–1.30	1.80
P3_1	–2.73	1.11	P8_1	–2.77	1.15
P3_2	–2.22	1.26	P8_2	–2.31	1.42
P3_3	–2.22	1.39	P8_3	–2.64	1.30
P3_4	–1.07	1.75	P8_4	–3.27	1.15
P4_1	–2.06	1.50	P8_5	–3.53	1.24
P4_2	–1.94	1.53	P8_6	–2.66	1.25
P4_3	–2.07	1.49	P8_7	–1.86	1.85
P4_4	–1.84	1.41	P8_8	–2.00	1.68
P5_1	–3.33	1.03	P8_9	–1.48	2.10
P5_2	–2.49	1.16	P8_10	–1.97	2.03
P5_3	–3.98	1.04	P8_11	–2.06	1.46
P5_4	–3.83	1.02	P8_12	–2.58	1.50
P6_1	–0.13	**14.67**	P8_13	–1.55	1.61
P6_2	–0.13	**14.67**	P8_14	–2.86	1.39
P6_3	–0.11	**14.70**			

Note. Maximum scores greater than |±4| are shown in bold.

Next, outlier analyses were performed. Table 6 shows the minimum and maximum values of the standardized scores (i.e., z-scores) of the items in the database. Close inspection of the minimum and maximum scores contribute to identifying if there are scores with strong departures from the average, for each one of the variables. It should be stressed that the

existence or not of univariate outliers depends on the operational definition of outliers. We chose to define outliers as values greater than $|\pm 4|$ and, there were positive outliers in 6 variables. In most cases, outlier cases were found in items from the innovation scale, which deal with frequencies (i.e., number of patents, number of products and services etc.). In these items the responses are not limited by a minimum and maximum value (1 to 7); as shown in Table 6, for these items, the maximum values were quite extreme.

We also searched for multivariate outliers. For this purpose, an analysis of multivariate outliers was made by using Mahalanobis distances (D^2). These cases were excluded from all subsequent analyses. Importantly, the exclusion of these multivariate outliers also contributed to the exclusion of univariate outliers presented in Table 6. For example, item P6_1, which had a maximum *z*-score of 14.67, now has a maximum value of 1.35, which suggests the effectiveness of excluding multivariate outliers to even solve the problem of univariate outliers.

3.5.3 Data Nature Test

Table 7 Normal distribution test for the study variables

Tests of Normality									
	Kolmogorov-Smirnov[a]								
	Total			**Spain**			**Brazil**		
	Statistic	df	Sig.	Statistic	df	Sig.	Statistic	df	Sig.
Social capital	0.082	226	0.001	0.081	160	0.012	0.136	66	0.004
Structural dimension	0.101	226	0.000	0.13	160	0.000	0.086	66	0.200*
Structural dimension	0.083	226	0.001	0.068	160	0.071*	0.124	66	0.014
Cognitive dimension	0.111	226	0.000	0.1	160	0.000	0.14	66	0.003
Innovation	0.247	266	0.000	0.263	160	0.000	0.206	66	0.000
entrepreneurial orientation	0.054	226	0.200*	0.085	160	0.007	0.108	66	0.055*
Innovation capacity	0.095	226	0.000	0.092	160	0.002	0.162	66	0.000
risk-taking	0.053	226	0.200*	0.067	160	0.079*	0.1	66	0.099*
Proactive	0.064	226	0.026	0.072	160	0.04	0.122	66	0.016

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

Table **7** shows the results of the Kolmogorov-Smirnov test, the test of the normal distribution of the variables, and by reading the significance of the test p-value and comparing it with the function level $\alpha = 0.05$ at which the hypotheses are accepted or rejected, we found that p-value $<\alpha = 0.05$ for all variables except entrepreneurial orientation and risk-taking. Therefore, we reject the null hypothesis and accept the hypothesis that the variables do not follow a normal distribution, except, entrepreneurial orientation and risk-taking follow a normal distribution because p-value$> \alpha = 0.05$

4 Results

4.1 Exploratory factor analysis

4.1.1 Social capital

Table 8 KMO and Bartlett's Test - Social capital

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.889
Bartlett's Test of Sphericity	Approx. Chi-Square	2104.909
	df	120
	Sig.	0.000

The results of Table 8 shows the value of KMO = 0.889, which is greater than 0.50, and this indicates the strength of reliability of the factors that we will obtain from the factor analysis, and also the sample size is sufficient.

As for the significance level of the Bartlett test (p-value = 0.000 <0.05), it confirms the existence of a statistically significant relationship and thus a factor analysis can be performed.

Table 9 Total Variance Explained - Social capital

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of SquaredLoadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.307	45.669	45.669	7.307	45.669	45.669	3.237	20.234	20.234
2	1.442	9.014	54.683	1.442	9.014	54.683	3.146	19.665	39.899
3	1.17	7.314	61.997	1.17	7.314	61.997	2.6	16.249	56.148
4	1.058	6.613	68.61	1.058	6.613	68.61	1.994	12.462	68.61

Extraction Method: Principal Component Analysis.

Table 9 shows the existence of 4 extracted factors, and the percentages of explaining the variances from the total variance of each factor were reached, where the first main factor has the largest latent root of 3.237 and explains 20.234% of the variances, while the four factors explain 68.61% of the variances.

Table 10 Rotated Component Matrix[a] - Social capital

Rotated Component Matrix[a]					
		Component			
		1	2	3	4
Cognitive	P4_3	**0.863**	0.251	0.183	0.178
	P4_2	**0.806**	0.291	0.241	0.173
	P4_1	**0.714**	0.322	0.291	0.201
	P4_4	**0.693**	0.231	0.148	0.127
Structural	P2_2	0.163	**0.811**	0.217	0.219
	P2_4	0.361	**0.740**	0.213	
	P2_3	0.411	**0.723**	0.136	
	P2_1	0.327	**0.682**		0.156
Relational	P3_1	0.110	**0.545**	0.422	0.397
	P5_3	0.193	0.113	**0.800**	
	P5_4	0.198		**0.759**	
	P5_1	0.189	0.216	**0.715**	0.292
	P5_2	0.127	0.236	**0.548**	0.404
	P3_4	0.253			**0.818**
	P3_3		0.384	0.204	**0.671**
	P3_2	0.458	0.291	0.206	**0.516**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization[a]
a. Rotation converged in 6 iterations.

Table 10 shows the factors matrix after rotation, which includes 4 factors. The first factor explains 20.234%, all the elements in this factor are represent the cognitive dimension; the second factor explains 19.665%, all the elements in this factor are represent the structural dimension except P3_1 which is a part of relational dimension; the third factor explains 16.249%; and finally, the fourth factor explains 12.462%, all the elements in the third and fourth factor are represent the relational dimension.

4.1.2 Innovation

Table 11 KMO and Bartlett's Test – innovation

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.486
Bartlett's Test of Sphericity	Approx. Chi-Square	1263.699
	df	21
	Sig.	0.000

The results of Table 11 show the value of KMO = 0.486 which is less than 0.50, and this indicates the poor reliability of the factors that we will obtain from the factor analysis, the function level of the Bartlett test 05.0 <000.0 = p-value (Bartlett) confirms the existence of a significant relationship. Thus, statistical factor analysis can be performed.

Table 12 Total Variance Explained - Innovation

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.17	31.001	31.001	2.17	31.001	31.001

Table 12 shows that there is one factor extracted because its latent root is greater than the integer one. The percentages of interpretation of variances were obtained from the total variance of it, where the underlying root of it is 17.2 and explains 31.001% of the variances.

As for the function level of the (Bartlett) p-value test = 0.000 <0.05, it confirms the existence of a statistically significant relationship, and thus a factor analysis can be performed.

Table 13 Rotated Component Matrix[a] – INNOVATION

Rotated Component Matrix[a]	
	Component
	1
P6_2	0.811
P6_1	0.789
P6_6	0.529
P6_5	0.506
P6_7	0.464
P6_4	0.369
P6_3	
Extraction Method: Principal Component Analysis. 1 component extracted.	

Table 13 shows the factor matrix which includes one factor: Which explains 31.001%. It has relationships with P6-2, P6-1, P6-6, P6-5, P6-7, P6-4

4.1.3 Entrepreneurial orientation

Table 14 KMO and Bartlett's Test - Entrepreneurial orientation

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.861
Bartlett's Test of Sphericity	Approx. Chi-Square	1565.194
	df	91
	Sig.	0.000

Table 14 shows the value of KMO = 0.861 which is greater than 0.50, and this indicates the strength of the reliability of the factors that we will obtain from the factor analysis, and also the sample size is sufficient.

As for the function level of the (Bartlett) p-value test = 0.000 <0.05, it confirms the existence of a statistically significant relationship and thus a factor analysis can be performed.

Table 15 Total Variance Explained - Entrepreneurial orientation

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.494	39.244	39.244	5.494	39.244	39.244	4.115	29.396	29.396
2	2.277	16.266	55.51	2.277	16.266	55.51	2.886	20.617	50.013
3	1.219	8.706	64.216	1.219	8.706	64.216	1.988	14.203	64.216

Extraction Method: Principal Component Analysis.

Table 15 shows the existence of 3 factors, and the percentages of interpretation of variances from the total variance of each factor were reached, where the first main factor has the largest latent root 4.115 and explains 29.396% of the variances, while the three factors explain 64.216% of the variances.

Table 16 Rotated Component Matrixa - Entrepreneurial orientation

Rotated Component Matrixa				
		Component		
		1	2	3
Innovation capacity	P8_5	**0.878**	0.152	
	P8_4	**0.874**	0.146	
	P8_6	**0.789**	0.269	
	P8_3	**0.736**		0.285
	P8_1	**0.664**		0.308
	P8_2	**0.585**		0.377
Risk-taking	P8_12	**0.572**	0.106	0.414
proactive	P8_10	0.102	**0.872**	0.145
	P8_7	0.211	**0.840**	0.126
	P8_9		**0.781**	
	P8_8	0.188	**0.769**	0.277
Risk-taking	P8_11	0.134	0.139	**0.743**
	P8_13		0.189	**0.714**
	P8_14	0.440	0.189	**0.566**

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.[a]

a. Rotation converged in 5 iterations.

Table 16 shows the factors matrix after rotation, which includes 3 factors. The first factor explains 29.396%, all the elements in this factor represent the Innovation capacity dimension; the second factor explains 20.617%, all the elements in this factor represent the proactive dimension except P8_12 which is a part of the risk-taking dimension; and finally, the third factor explains 14.203%, all the elements in this factor are represent the risk-taking dimension.

4.2 Correlation

4.2.1 Partial Correlation between the variables by excluding the influence of the control variables

Table 17 shows the relationship of the independent variable, social capital and its dimensions with the dependent variables entrepreneurial orientation and innovation by excluding the effect of control variables**.**

Table 17 The correlation of social capital and its dimensions with innovation by excluding the influence of Control variable

The correlation of social capital and its dimensions with innovation by excluding the influence of Control variable				
Control Variables			Innovation	entrepreneurial orientation
Country **Employee number**	**Social Capital**	Correlation	0.233	0.249**
		Sig. (2-tailed)	0.001**	0.000
		df	217	221
	Structural dimension	Correlation	0.163**	0.238**
		Sig. (2-tailed)	0.016	0.000
		df	217	221
	Relational dimension	Correlation	0.208**	0.153**
		Sig. (2-tailed)	0.002*	0.022
		df	217	221
	Cognitive dimension	Correlation	0.228**	0.249**
		Sig. (2-tailed)	0.001	0.000
		df	217	221
	entrepreneurial orientation	Correlation	0236	
		Sig. (2-tailed)	0.000**	
		df	217	

**. Correlation is significant at the 0.05 level (2-tailed).

The results of Table 17 show that there are weak direct relationships with statistical significance between the independent variable social capital and its dimensions with the dependent variables innovation and entrepreneurial orientation when excluding the effect of control variables, because the significance test is smaller than the significance level. p-value $<\alpha = 0.05$

It was also found that there is a week direct correlation relationship with a statistical significance between innovation and entrepreneurial orientation when excluding the influence of control variables, because the significance test is smaller than the level of the significance. p-value $<\alpha = 0.05$.

4.2.2 partial correlation between the variables by excluding the influence of the controlling variable (country, number of employees):

Table 18 partial correlation between the variables by excluding the influence of the controlling variable (country, number of employees):

Control Variables			social capital	structural dimension	relational dimension	cognitive dimension	entrepreneurial orientation	innovation Capacity	risk-taking	proactive	innovation
country and employee number	Social Capital	Corr	1	0.851*	0.889*	0.863*	0.243*	0.202*	0.117	0.249*	0.229*
		Sig. (2-tailed)	.	0.000	0.000	0.000	0.000	0.002	0.08	0.000	0.001
		df	0	222	220	222	222	222	222	222	218
	Structural Dimension	Corr		1	0.599*	0.660*	0.238*	0.220*	0.092	0.237*	0.167*
		Sig. (2-tailed)		.	0.000	0.000	0.000	0.001	0.168	0.000	0.013
		df		0	220	222	222	222	222	222	218
	Relational Dimension	Corr			1	0.621*	0.153*	0.120	0.090	0.150*	0.209*
		Sig. (2-tailed)			.	0.000	0.023	0.075	0.183	0.025	0.002
		df			0	220	220	220	220	220	216
	Cognitive Dimension	Corr				1	0.271*	0.222*	0.128	0.287*	0.228*
		Sig. (2-tailed)				.	0.000	0.001	0.055	0.000	0.001
		df				0	222	222	222	222	218
	entrepreneurial orientation	Corr					1	0.843*	0.683*	0.755*	0.237*
		Sig. (2-tailed)					.	0.000	0.000	0.000	0.000
		df					0	222	222	222	218
	Innovation Capacity	Corr						1	0.286*	0.526*	0.257*
		Sig. (2-tailed)						.	0.000	0.000	0.000
		df						0	222	222	218
	Risk-taking	Corre							1	0.322*	0.068
		Sig. (2-tailed)							.	0.000	0.317
		df							0	222	218
	Proactive	Corr								1	0.206*
		Sig. (2-tailed)								.	0.002
		df								0	218
	Innovation	Corr									1
		Sig. (2-tailed)									.
		Corr									
		Sig. (2-tailed)									
		df									
*. Correlation is significant at the 0.05 level (2-tailed).											

Table 18 shows the partial correlation relationships between the study variables, excluding the influence of the control variables. The correlation coefficient conveys the accurate study of one variable from another. This correlation coefficient must lie from -1.00 to +1.00. According to Pallant (2011), the strength of the relationships between them varied

between the weak (less than 0.3), the medium between (0.3 and 0.6) and the strong (more than 0.6).

There are non-statistically significant relationships between some variables because the test significance is greater than the level of significance p-value> α = 0.05, (risk-taking relationship with social capital and its three dimensions and its relationship with innovation and the type of company, the relationship of the company type with entrepreneurial orientation and its dimensions and its relationship with innovation, Relational dimension relationship with ability).

4.2.3 Correlation between the independent variable social capital and its dimensions with the dependent variables innovation and entrepreneurial orientation

To verify the existence of statistically significant relationships between social capital and its dimensions with the variables, innovation and entrepreneurial orientation, and to know the strength and direction of this relationship, if any, and Table 19 shows the results of Spearman's correlation because the data are not normally distributed.

Table 19 The relevance of social capital and its dimensions with innovation

		Innovation	Entrepreneurial orientation
Social Capital	Spearman's rho	0.257	0.274**
	Sig. (2-tailed)	0.000**	0.000
	N	222	226
Structural dimension	Spearman's rho	0.182**	0.239**
	Sig. (2-tailed)	0.006	0.000
	N	222	226
relational dimension	Spearman's rho	0.210**	0.178**
	Sig. (2-tailed)	0.002	0.008
	N	220	224
Cognitive dimension	Spearman's rho	0.262	0.316**
	Sig. (2-tailed)	0.000	0.000
	N	222	226
entrepreneurial orientation	Spearman's rho	0.310**	
	Sig. (2-tailed)	0.000	
	N	222	

**. Correlation is significant at the 0.05 level (2-tailed).

The results of Table 19 show that there are weak direct relationships of statistical significance between the independent variable social capital and its dimensions, with the dependent variable innovation, because the significance test is smaller than the significance level p-value <α = 0.05.

It should be noted that four extreme values of innovation and two extreme values of relational dimension have been removed. It was also found that there is a statistically

significant average positive correlation between innovation and entrepreneurial orientation because the test significance is smaller than the significance level 05.0 = α <p-value.

Weak direct relations with a statistical function between the independent variable social capital and its dimensions the structural dimension and the relational dimension with the dependent variable entrepreneurial orientation, because the significance test is smaller than the function level p-value <α = 0.05, and it was found that there is a moderate direct correlation between the cognitive dimension and entrepreneurial orientation because the significance test is smaller than the function level. p-value <α = 0.05

It was also found that there is a medium direct correlation with a statistically significant relationship between innovation and entrepreneurial orientation, because the significance test is smaller than the function level. p-value <α = 0.05

4.2.4 Correlation between all variables:

Table 20 Correlation between all variables

Control Variables		social capital	structural dimension	relational dimension	cognitive dimension	entrepreneurial orientation	innovation Capacity	risk-taking	proactive	innovation	company type	country	employee number
social capital	Corr	1	0.851*	0.863*	0.852*	0.274*	0.244*	0.141*	0.286*	0.257*	-0.415*	0.152*	0.088
	Sig. (2-tailed)	.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.023	0.189
	df	226	226	224	226	226	226	226	226	222	226	226	226
structural dimension	Corr		1	0.591*	0.640*	0.239*	0.219*	0.118	0.227*	0.182*	-0.306*	0.098	0.036
	Sig. (2-tailed)		.	0.000	0.000	0.000	0.001	0.077	0.000	0.006	0.000	0.142	0.594
	df		226	224	226	226	226	226	226	222	226	226	226
relational dimension	Corr			1	0.603*	0.178*	0.167*	0.101	0.181*	0.210*	-0.406*	0.117	0.042
	Sig. (2-tailed)			.	0.000	0.008	0.012	0.133	0.007	0.002	0.000	0.080	0.535
	df			226	224	224	224	224	224	222	224	224	224
cognitive dimension	Corr				1	0.316*	0.253*	0.171*	0.352*	0.262*	-0.383*	0.212*	0.129
	Sig. (2-tailed)				.	0.000	0.000	0.010	0.000	0.000	0.000	0.001	0.052
	df				226	226	226	226	226	222	226	226	226
entrepreneurial orientation	Corr					1	0.817*	0.695*	0.790*	0.310*	-0.137*	0.365*	0.225*
	Sig. (2-tailed)					.	0.000	0.000	0.000	0.000	0.039	0.000	0.001
	df					226	226	226	226	222	226	226	226
innovation Capacity	Corr						1	0.290*	0.550*	0.309*	-0.101	0.165*	0.243*
	Sig. (2-tailed)						.	0.000	0.000	0.000	0.129	0.013	0.000
	df						226	226	226	222	226	226	226
risk-taking	Corr							1	0.374*	0.126	-0.052	0.288*	0.019
	Sig. (2-tailed)							.	0.000	0.061	0.434	0.000	0.775

	df							226	226	222	226	226	226
proactive	Corr								1	0.303*	-0.196*	0.471*	0.286
	Sig. (2-tailed)								.	0.000	0.003	0.000	0.000
	df								226	222	226	226	226
innovation	Corr									1	-0.131	0.152*	0.248*
	Sig. (2-tailed)									.	0.052	0.024	0.000
	df									226	222	222	222
innovation	Corr										1	-.253*	-0.237*
	Sig. (2-tailed)										.	0.000	0.000
	df										226	226	226
country	Corr											1	0.188
	Sig. (2-tailed)											.	0.005
	df											226	226
employee number	Corr												1
	Sig. (2-tailed)												.
	df												226
*. Correlation is significant at the 0.05 level (2-tailed).													

Table 20 shows the correlations between the study variables, and the strength of the relationships between them varied between the weak (less than 0.3) and the average between (0.3 and 0.6) and the strong) more than 0.6)

There are non-statistically significant relationships between some variables because the test significance is greater than the level of significance p-value> $\alpha = 0.05$ (the relationship of the number of employees to the social capital and its dimensions and its relationship to risk-taking and the country, the country's relationship with the structural and relational dimensions, the relationship of innovation to the type of company, the risk-taking relationship with the two structural dimensions. And relational and its relationship with innovation and type of company).

4.3 study the impact of social capital on innovation and entrepreneurial orientation

4.3.1 the impact of social capital on innovation

After verifying the existence of a real, statistically significant relationship between the three dimensions of social capital and innovation, it is necessary checking the linearity of the relationship between the two variables. Table 21 shows the results of the linear deviation test.

Table 21Examine the linear relationship between the dimensions of social capital and innovation

		Sum of Squares	df	Mean Square	F	Sig.
Structural dimension * Innovation	Deviation from Linearity	2.771	24	0.115	0.764	0.778
Relational dimension * Innovation	Deviation from Linearity	6.816	42	0.162	1.157	0.255
Cognitive dimension * innovation	Deviation from Linearity	3.573	24	0.149	1.061	0.392

Test of linearity

Results of Table 21 show the existence of a linear relationship between innovation and all dimensions of social capital because the significance of the deviation from linearity is p-value> α = 0.05. Therefore, we accept the hypothesis which states that there is a linear relationship between innovation and all dimensions of capital. Social.

Table 22 results of a simple linear regression of the effect of structural dimension on innovation

Model Summary					Parameter Estimates			
R	R Square	R Square	F	Sig		B	t	Sig
0.182	0.033	0.029	7.546	0.007	Constant	-0.319	-3.859	0.000
					b1	0.049	2.747	0.007

Dependent Variable: Innovation
The independent variable is :Structural dimension

Table 22 shows the value of the coefficient of determination Adjusted R Square = 0.033, which means that the independent variable (structural dimension) was able to explain 3.3% of the changes in the dependent variable (innovation). It was also found that the model was statistically significant, as the test statistic was smaller than the significance level p-value = 0.007 <α = 0.05, indicating a statistically significant impact of structural dimension on innovation.

The results also showed that the regression model constant is negative and significant (p-value = 0.000 <α = 0.05) and its value is -0.319, while the value of the parameter b1 = 0.049 which is positive and significant (p-value = 0.007 <α = 0.05), and based on the above, the regression equation of the figure $Y = 0.049X - 0.319$, which means that as structural dimension increases by one unit, innovation increases by 0.049. The regression constant means that innovation equals -0.319 when there is no structural dimension. Accordingly, there is a positive relationship between the structural dimension of social capital and innovation. So, we can accept H1.1.

Table 23 results of a simple linear regression of the effect of relational dimension on innovation

Model Summary					Parameter Estimates			
R	**R Square**	**R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.220	0.049	0.044	11.118	0.001	**Constant**	-0.543	-4.033	0.000
					b1	0.087	3.334	0.001

Dependent Variable: Innovation
The independent variable is : relational dimension

Table 23 shows the value of the coefficient of determination Adjusted R Square = 0.049, which means that the independent variable (relational dimension) was able to explain 4.9% of the changes in the dependent variable (innovation).

It was also found that the model was statistically significant, as the test statistic was smaller than the significant level p-value = 0.001 <α = 0.05, indicating a statistically significant effect of relational dimension on innovation.

The results also showed that the regression model constant is negative and significant because p-value = 0.000 <α = 0.05 and its value is -0.543, while the value of the parameter b1 = 0.087 which is positive and significant because p-value = 0.001 <α = 0.05, and based on the above, the regression equation of the figure: $Y = 0.087X - 0.543$, which means that as the relational dimension increases by one unit, the innovation increases by 0.087.

The regression constant means that innovation equals 0.543 when there is no relational dimension of social capital. Accordingly, H1.2 is confirmed based on the result, there is a positive relationship between the relational dimension of social capital and innovation.

Table 24 Results of a simple linear regression of the effect of cognitive dimension on innovation

Model Summary					Parameter Estimates			
R	**R Square**	**R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.268	0.072	0.068	17.065	0.000	**Constant**	-0.412	-5.218	0.000
					b1	0.070	4.131	0.000

Dependent Variable: Innovation
The independent variable is : cognitive dimension

Table 24 shows the value of Adjusted R Square = 0.072, which means that the independent variable (cognitive dimension), were able to explain 7.2% of the changes in the dependent variable (innovation). The model was also found to be statistically significant, as

the test statistic was smaller than the significance level p-value = 0.000 <α = 0.05, indicating a statistically significant effect of cognitive dimension on innovation.

The results also showed that the regression model constant is negative and significant because p-value = 0.000 <α = 0.05 and its value is -0.412, while the value of the parameter b1 = 0.070, which is positive and significant, because p-value = 0.000 <α = 0.05.

Based Table 24, the regression equation from the figure: $Y = 0.070X - 0.412$, which means that as the cognitive dimension increases by one unit, the innovation increases by 0.070. The regression constant means that innovation equals -0.412 when there is no cognitive dimension. Accordingly, H1.3 is confirmed based on the result, there is a positive relationship between the cognitive dimension of social capital and innovation.

Table 25 Results of multiple linear regression the impact of social capital dimensions on innovation

Model Summary					Parameter Estimates			
R	**R Square**	**R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.280	0.79	0.066	6.135	0.001	**Constant**	-0.533	-4.004	0.000
					b1	-0.005	-0.209	0.835
					b2	0.037	1.054	0.293
					b3	0.061	2.470	0.014

Dependent Variable: Innovation

The independent variable is : b1= structural dimension, b2= relational dimension, b3= cognitive dimension

Table 25 shows the value of Adjusted R Square = 0.066, which means that the independent variables (structural dimension, relational dimension and cognitive dimension), were able to explain 6.6% of the changes in the dependent variable (innovation). The model was also found to be statistically significant, as the test statistic was smaller than the significance level p-value = 0.001 <α = 0.05, indicating a statistically significant effect of structural dimension, relational dimension and cognitive dimension on innovation.

The results also showed that the regression model constant is negative and significant because p-value = 0.000 <α = 0.05 and its value is -0.533, while the value of the parameter b1 = -0.005, Which expresses the structural dimension is negative and insignificant, because p-value = 0.835 <α = 0.05. while the value of the parameter b2 = 0.037, Which expresses the relational dimension is positive and insignificant, because p-value = 0.293<α = 0.05, and the value of the parameter b3 = 0.061, Which expresses the cognitive dimension is positive and significant, because p-value = 0.014<α = 0.05.

Based on Table 25 results, the regression equation from the figure$Y = -0.005X_1 + 0.037X_2 + 0.061X_3 - 0.533$. The regression constant means that innovation equals -0.533 when there is no structural dimension, relational dimension and cognitive dimension.

Table 26 Multiple regression of the impact of social capital dimensions on innovation and control variables (country and number of employees):

Model Summary					Parameter Estimates			
R	**R Square**	**R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.394	0.155	0.135	7.858	0.000	**Constant**	-0.818	-5.534	0.000
					b1	-0.002	-0.064	0.949
					b2	0.042	1.265	0.207
					b3	0.043	1.761	0.080
					b4	0.064	1.135	0.258
					b5	0.067	3.968	0.000

Dependent Variable: innovation

The independent variables are: b1= cognitive dimension, b2= relational dimension, b3= structural dimension, b4= country, b5= number of employees.

Table 26 shows the value of the corrected coefficient of determination Adjusted R Square = 0.135, which means that the variables were able to explain 13.5% of the changes of the dependent variable.

The model is statistically significant where the test statistic was smaller than the significance level p-value = 0.000 <α = 0.05, indicating the existence of a statistically significant effect of the dimensions of social capital on innovation with the control variables (number of employees and the country).

The results also showed that the regression model constant is negative and significant because P-value = 0.000 <α = 0.05 and its value is -0. 818. As for the value of the parameter b1 = -0.002, which expresses the structural dimension, it is negative and insignificant, because p-value = 0.949> α = 0.05, and the value of the parameter b2 = 0.042, which expresses the relational dimension, is positive and insignificant, because p-value = 0.207> α = 0.05, and the value of the parameter b3 = 0.043, which expresses the cognitive dimension. It is positive and insignificant because p-value = 0.080> α = 0.05. The value of the coefficient expressing the country b4 = 0.064, which is positive and insignificant, because p-value = 0.258> α = 0.05. As for the value of the parameter that expresses the number of employees, b5 = 0.067, which is positive and significant, because p-value = 0.000 <α = 0.05.

Based on the foregoing, the equation for the regression of the figure: $Y = -0.002X_1 + 0.042X_2 + 0.043X_3 + 0.064X_4 + 0.067X_5 - 0.818$

4.3.2 the impact of social capital on entrepreneurial orientation:

After verifying the existence of a real, statistically significant relationship between the three dimensions (structural, relational, and cognitive) and entrepreneurial orientation, the impact can be studied, but before embarking on a study of the effect of structural dimension on entrepreneurial orientation and the impact of relational dimension on entrepreneurial orientation and the effect of cognitive dimension on entrepreneurial orientation it is necessary. Checking the linearity of the relationship between the two variables. The following Table shows the results of the linearity deviation test.

Table 27 The linear relationship between the three dimensions (structural, relational and cognitive) of social capital and entrepreneurial orientation

		Sum of Squares	df	Mean Square	F	Sig.
entrepreneurial orientation * structural dimension	Deviation from Linearity	21.624	24	0.901	1.068	0.384
entrepreneurial orientation * relational dimension	Deviation from Linearity	44.097	42	1.050	1.238	0.172
entrepreneurial orientation * cognitive dimension	Deviation from Linearity	15.058	24	0.627	0.753	0.792

Test of Linearity

The results of Table 27 show the existence of a linear relationship between entrepreneurial orientation and the structural, relational and cognitive dimensions of social capital because the significance of the deviation from linearity is p-value> $\alpha = 0.05$. Therefore, we accept the hypothesis which states that there is a linear relationship between entrepreneurial orientation and the structural and relational dimensions of social capital.

After verifying the linearity of the relationship between entrepreneurial orientation and the structural, relational and cognitive dimensions of social capital, the following Table shows the results of a simple linear regression of the effect of structural social capital on entrepreneurial orientation.

Table 28 results of a simple linear regression of the effect of structural dimension on entrepreneurial orientation

Model Summary					Parameter Estimates			
R	**R Square**	**R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.255	0.065	0.061	15.600	0.000	**Constant**	3.903	19.787	0.000
					b1	0.167	3.950	0.000

Dependent Variable: entrepreneurial orientation
The independent variable is structural; dimension

Table 28 shows the value of the coefficient of determination Adjusted R Square = 0.065, which means that the independent variable (structural dimension) was able to explain 6.5% of the changes in the dependent variable (entrepreneurial orientation).

The model was also found to be statistically significant, as the test statistic was smaller than the significance level p-value = 0.000 <α = 0.05, which indicates the existence of a statistically significant effect of structural dimension on entrepreneurial orientation.

The results also showed that the regression model constant is positive and significant because p-value = 0.000 <α = 0.05 and its value is 3.903. As for the value of the parameter b1 = 0.167, which is positive and significant because p-value = 0.000 <α = 0.05, and based on the above, the regression equation of the figure: $Y = 0.167X + 3.903$.

The constant regression means that entrepreneurial orientation equals 3.903 when there is no structural dimension. Accordingly, H2.2 confirmed based on the result, there is a positive relationship between the structural dimension of social capital and entrepreneurial orientation.

Table 29 results of a simple linear regression of the effect of relational dimension on entrepreneurial orientation

Model Summary					Parameter Estimates			
R	**R Square**	**R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.178	0.032	0.027	7.258	0.008	**Constant**	3.768	11.405	0.000
					b1	0.173	2.694	0.008

Dependent Variable: entrepreneurial orientation

The independent variable is relational dimension.

Table 29 shows the value of the coefficient of determination Adjusted R Square = 0.032, which means that the independent variable (relational demission) was able to explain 3.2% of the changes in the dependent variable (entrepreneurial orientation).

The model was also found to be statistically significant, as the test statistic was smaller than the significance level p-value = 0.008 <α = 0.05, which indicates the existence of a statistically significant effect of relational demission on entrepreneurial orientation.

The results also showed that the regression model constant is positive and significant because p-value = 0.000 <α = 0.05 and its value is 3.768. As for the value of the parameter b1 = 0.173, which is positive and significant because p-value = 0.008 <α = 0.05, and based on the above, the regression equation of the figure: $Y = 0.173X + 3.768$.

The regression constant means that entrepreneurial orientation equals 3.768 when there is no relational dimension. Accordingly, H2.1 is confirmed based on the result, there is a positive relationship between the relational dimension of social capital and entrepreneurial orientation.

Table 30 results of a simple linear regression of the effect of cognitive dimension on entrepreneurial orientation

Model Summary					Parameter Estimates			
R	**R Square**	**R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.328	0.108	0.104	26.999	0.000	**Constant**	3.727	20.024	0.000
					b1	0.207	5.196	0.000

Dependent Variable: entrepreneurial orientation
The independent variable is cognitive dimension.

Table 30 shows the value of the coefficient of determination Adjusted R Square = 0.108, which means that the independent variable of (cognitive dimension) was able to explain 10.8% of the changes in the dependent variable (entrepreneurial orientation).

The model was also found to be statistically significant, as the test statistic was smaller than the significance level p-value = 0.000 <α = 0.05, which indicates the existence of a statistically significant effect of cognitive dimension on entrepreneurial orientation.

The results also showed that the regression model constant is positive and significant because p-value = 0.000 <α = 0.05 and its value is 3.727, while the value of the parameter b1 = 0.207, which is positive and significant, because p-value = 0.000 <α = 0.05, and based on the above, the regression equation of the figure: $Y = 0.207X + 3.727$. The constant regression means that entrepreneurial orientation is equal to 3.727 when there is no cognitive dimension.

Accordingly, H2.3 confirmed based on the result, there is a positive relationship between the cognitive dimension of social capital and entrepreneurial orientation.

Table 31 Multiple linear regression of the effect of structural dimension, relational dimension, and cognitive dimension on entrepreneurial orientation

Model Summary					Parameter Estimates			
R	**R Square**	**R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.350	0.123	0.111	10.254	0.000	**Constant**	3.825	12.088	0.000
					b1	0.074	1.254	0.211
					b2	-0.088	-1.053	0.294
					b3	0.209	3.617	0.000

Dependent Variable: entrepreneurial orientation
The independent are b1= structural dimension, b2= relational dimension, b3= cognitive dimension.

Table 31 shows the value of Adjusted R Square = 0.111, which means that the independent variables, (Structural dimension, Relational dimension, and Cognitive dimension) were able to explain 11.1% of the changes in the dependent variable (entrepreneurial orientation).

The model was also found to be statistically significant, as the test statistic was smaller than the significance level p-value = 0.000 <α = 0.05, which indicates the existence of a statistically significant effect of Structural dimension, Relational dimension, and Cognitive dimension on entrepreneurial orientation.

The results also showed that the regression model constant is positive and significant because p-value = 0.000 <α = 0.05 and its value is 3.825, while the value of the parameter b1 = 0.074, which expresses the structural dimension is positive and insignificant, because p-value = 0.211> α = 0.05, and the value of the parameter b2 = -0.088, which expresses the relational dimension, is negative and insignificant, because p-value = 0.294> α = 0.05, and the value of the parameter b3 = 0.209, which expresses the cognitive dimension, is positive and significant because. p-value = 0.000 <α = 0.05

The regression equation from Table 30: $Y = 0.074X_1 - 0.088X_2 + 0.209X_3 + 3.825$. The constant regression means that entrepreneurial orientation is equal to 3,825 when there is no structural dimension, relational dimension and cognitive dimension.

Table 32 Multiple regression of the impact of social capital dimensions on entrepreneurial orientation and control variables (country and number of employees):

Model Summary					Parameter Estimates			
R	**R Square**	**R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.476	0.226	0.209	12.762	0.000	**Constant**	2.890	8.349	0.000
					b1	0.081	1.460	0.146
					b2	-0.060	-0.768	0.443
					b3	0.140	2.504	0.013
					b4	0.571	4.326	0.000
					b5	0.096	2.438	0.016

Dependent Variable: entrepreneurial orientation
The independent variables are: b1=cognitive dimension, b2=relational dimension, b3= structural dimension, b4= country, b5= number of employees.

Table 32 shows the value of the corrected coefficient of determination R Square = 0.209 Adjusted, meaning that the variables were able to explain 20.9% of the dependent variable changes in entrepreneurial orientation.

The model is statistically significant as the test statistic was smaller than the level of significance p-value = 0.000 <α = 0.05, which indicates the existence of a statistically

significant effect of the dimensions of social capital on entrepreneurial orientation is controlled by the number of employees and the country.

The results also showed that the regression model constant is positive and significant because p-value = 0.000 <α = 0.05 and its value is 2.890, while the value of the parameter b1 = 0.081 which expresses the structural dimension is positive and insignificant because p-value = 0.146> α = 0.05. The parameter b2 = -0.06 which expresses the relational dimension is positive and non-significant because p-value = 0.443> α = 0.05, and the value of the parameter b3 = 0.140 which expresses the cognitive dimension is positive and significant because p-value = 0.013 <α = 0.05. The value of the coefficient expressing the country b4 = 0.571, which is positive and significant, because p-value = 0.000 <α = 0.05. As for the value of the parameter that expresses the number of employees, b5 = 0.096, which is positive and significant because p-value = 0.016 <α = 0.05.

Based on the foregoing, the equation for the regression of the figure: $Y = 0.0081X_1 - 0.060X_2 + 0.1403X_3 + 0.571X_4 + 0.096X_5 + 2.890$

4.4 Study each country separately:

4.4.1 Correlation

To verify the existence of a statistically significant relationship between social capital and its dimensions with the dependent variables innovation and entrepreneurial orientation in Spain, and to know the strength and direction of this relationship, if any, the following Table shows the results of the Spearman correlation because the data are not distributed naturally and because it is more appropriate to the Likert scale of seven.

Table 33 The correlation between social capital and its dimensions with innovation and entrepreneurial orientation in Spain

		innovation	entrepreneurial orientation
social capital	Spearman's rho	0.255**	0.251**
	Sig. (2-tailed)	0.001	0.001
	N	157	160
structural dimension	Spearman's rho	0.190**	0.242**
	Sig. (2-tailed)	0.017	0.002
	N	157	160
relational dimension	Spearman's rho	0.201**	0.147
	Sig. (2-tailed)	0.012	0.064
	N	157	160
Cognitive dimension	Spearman's rho	0.227**	0.262**
	Sig. (2-tailed)	0.004	0.001
	N	157	160
entrepreneurial orientation	Spearman's rho	0.183**	
	Sig. (2-tailed)	0.022	
	N	157	

**. Correlation is significant at the 0.05 level (2-tailed).

The results of Table 33 show the existence of weak direct relationships of statistical significance between the independent variable social capital and its dimensions with the dependent variable innovation in Spain, because the significance of the test is smaller than the significance level p-value $<\alpha = 0.05$. It should be noted that three values have been removed from innovation because they are extreme values.

Show the existence of weak direct relationships of statistical significance between the independent variable social capital and its dimensions with the dependent variable entrepreneurial orientation in Spain because the significance of the test is smaller than the significance level p-value $<\alpha = 0.05$.

There is a weak and statistically significant correlation between innovation and entrepreneurial orientation in Spain, because the test significance is smaller than the significance level p-value $<\alpha = 0.05$.

Table 34 The correlation between social capital and its dimensions with innovation and entrepreneurial orientation in Brazil

		innovation	entrepreneurial orientation
social capital	Spearman's rho	0.166	0.223
	Sig. (2-tailed)	0.187	0.072
	N	65	66
structural dimension	Spearman's rho	0.130	0.195
	Sig. (2-tailed)	0.303	0.117
	N	65	66
relational dimension	Spearman's rho	0.173	0.195
	Sig. (2-tailed)	0.168	0.116
	N	65	66
Cognitive dimension	Spearman's rho	0.225	0.270**
	Sig. (2-tailed)	0.071	0.028
	N	65	66
entrepreneurial orientation	Spearman's rho	0.479**	
	Sig. (2-tailed)	0.000	
	N	65	
**. Correlation is significant at the 0.05 level (2-tailed).			

Results Table 34 shows no statistically significant relationship between the independent variable social capital and its dimensions with the dependent variable innovation in Brazil, because the test significance is greater than the significance level p-value> $\alpha = 0.05$. Hence, regression models cannot be studied. It should be noted that an innovation value has been omitted because it is an extreme value.

There is a positive, weak and statistically significant relationship bbetween the independent variable cognitive dimension and the dependent variable entrepreneurial orientation in Brazil, because the test significance is smaller than the significance level p-value $<\alpha = 0.05$. There is no correlation between social capital and the two structural and relational dimensions and entrepreneurial orientation, because the test significance is greater than the significance level p-value> $\alpha = 0.05$.

There is a median correlation with statistically significant, between innovation and entrepreneurial orientation in Brazil, because the test significance is smaller than the significance level p-value $<\alpha = 0.05$.

4.4.2 The impact of social capital on innovation in Spain:

After verifying that there is a true, statistically significant relationship between the dimensions of social capital and innovation in Spain, we can study the impact, but it is

necessary to verify the linearity of the relationship between the two variables by examining the linearity deviation:

Table 35 The linear relationship between dimensions of social capital and innovation in Spain

		Sum of Squares	df	Mean Square	F	Sig.
innovation * structural dimension	Deviation from Linearity	3.729	23	0.162	1.303	0.178
innovation * relational dimension	Deviation from Linearity	6.753	40	0.169	1.472	0.058
innovation * cognitive dimension	Deviation from Linearity	3.680	22	0.167	1.376	0.138

Test of Linearity

Table 35 shows the existence of a linear relationship between innovation and dimensions of social capital in Spain, because the significance of the deviation from linearity is p-value> α = 0.05. We thus accept the hypothesis which states that there is a linear relationship between innovation and dimensions of social capital in Spain.

Table 36 Simple Linear Regression of the Structural Dimension's Impact on Innovation in Spain:

Model Summary					Parameter Estimates			
R	**R Square**	**R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.180	0.032	0.026	5.171	0.024	**Constant**	-0.350	-3.716	0.000
					b1	0.047	2.274	0.024

Dependent Variable: innovation
The independent variable structural dimension

Table 36 shows the value of the coefficient of determination Adjusted R Square = 0.032 meaning that the independent variable is the structural dimension, which was able to explain 3.2% of the changes in the dependent variable of innovation in Spain. There is a statistically significant impact of structural dimension on innovation in Spain because the test statistic is smaller than the significance level p-value = 0.024 <α = 0.05,

The regression model constant is negative and significant, because p-value = 0.000 <α = 0.05 and its value -0.350. The value of the parameter b1 = 0.047, It is positive and significant because p-value = 0.024 <α = 0.05. Accordingly, the formula for the regression from the figure: $Y = 0.047X - 0.350$. The regression constant implies that the innovation is -0.350 when no structural dimension.

Table 37 Simple Linear Regression of the Relational Dimension's Impact on Innovation in Spain:

Model Summary					Parameter Estimates			
R	**R Square**	**R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.206	0.042	0.036	6.880	0.010	**Constant**	-0.542	3.527	0.001
					b1	0.079	2.623	0.010

Dependent Variable: innovation
The independent variable relational dimension

Table 37 shows the value of the coefficient of determination Adjusted R Square = 0.042 meaning that the independent variable is the relational dimension, which was able to explain 4.2% of the changes in the dependent variable of innovation in Spain. There is a statistically significant impact of relational dimension on innovation in Spain because the test statistic is smaller than the significance level p-value = 0.010 <α = 0.05,

The regression model constant is negative and significant, because p-value = 0.001 <α = 0.05 and its value -0.542. The value of the parameter b1 = 0.079, It is positive and significant because p-value = 0.010 <α = 0.05.

Accordingly, the formula for the regression from the figure: $Y = 0.079X - 0.542$. The regression constant implies that the innovation is -0.542 when no relational dimension.

Table 38 Simple Linear Regression of the cognitive Dimension's Impact on Innovation in Spain:

Model Summary					Parameter Estimates			
R	**R Square**	**R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.217	0.047	0.041	7.623	0.006	**Constant**	-0.376	-4.271	0.000
					b1	0.055	2.761	0.006

Dependent Variable: innovation
The independent variable cognitive dimension

Table 38 shows the value of the coefficient of determination Adjusted R Square = 0.047 meaning that the independent variable is the cognitive dimension, which was able to explain 4.7% of the changes in the dependent variable of innovation in Spain. There is a statistically significant impact of cognitive dimension on innovation in Spain because the test statistic is smaller than the significance level p-value = 0.006 <α = 0.05,

The regression model constant is negative and significant, because p-value = 0.000 <α = 0.05 and its value -0.376. The value of the parameter b1 = 0.055, It is positive and significant because p-value = 0.006 <α = 0.05.

Accordingly, the regression constant implies that the innovation is -0.376 when no cognitive dimension.

Table 39 Multiple linear regression of the impact of social capital dimensions on innovation in Spain

Model Summary					Parameter Estimates			
R	**R Square**	**R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.238	0.057	0.038	3.062	0.030	**Constant**	-0.533	-3.466	0.001
					b1	0.007	0.236	0.814
					b2	0.044	1.117	0.266
					b3	0.033	1.164	0.246

Dependent Variable: innovation
The independent variable : b1= structural dimension, b2= relational dimension, b3= cognitive dimension

Table 39 shows the value of Adjusted R Square = 0.038, it means that the independent variables (the structural dimension, the relational dimension, and the cognitive dimension were able to explain 3.8% of the variables of the dependent variable, innovation in Spain. The test statistic is smaller than the significance level p-value = 0.030 <α = 0.05, which indicates the existence of a statistically significant impact of the three dimensions on innovation in Spain.

The results also showed that the regression model constant is negative and significant because p-value = 0.001 <α = 0.05 and its value -0.533.

As for the value of the parameter b1 = 0.007, which expresses the structural dimension is positive and insignificant, because p-value = 0.814> α = 0.05, the value of the parameter b2 = 0.044, which expresses the relational dimension, it is positive and non-significant because p-value = 0.266> α = 0.05, and the value of the parameter b3 = 0.033, which expresses the cognitive dimension, it is positive and non-significant because p-value = 0.246> α = 0.05.

Based on the foregoing, the regression equation from the figure: $Y = 0.007X_1 + 0.044X_2 + 0.033X_3 - 0.533$ The regression constant means innovation of when the structural, relational, and cognitive dimension is absent in Spanish.

4.4.3 The impact of social capital on entrepreneurial orientation in Spain:

After verifying the existence of a real statistically significant relationship between the structural dimension, the cognitive dimension and entrepreneurial orientation in Spain, this was possible to study the impact, but first it is necessary to verify the linearity of the relationship between the two variables.

Table 40 The linear relationship between the structural dimension, the cognitive dimension and entrepreneurial orientation in Spain

		Sum of Squares	df	Mean Square	F	Sig.
entrepreneurial orientation * structural dimension	Deviation from Linearity	18.891	23	0.821	1.195	0.260
entrepreneurial orientation * cognitive dimension	Deviation from Linearity	13.090	22	0.595	0.823	0.693
Test of linearity						

The results of Table 40 show the existence of a linear relationship between entrepreneurial orientation and the two dimensions of social capital (structural dimension, and the cognitive dimension) in Spain because the significance of the deviation from the linearity is p-value> α = 0.05 and thus we accept the hypothesis which states that there is a linear relationship between the structural dimension and the cognitive dimension of the head. Social capital and entrepreneurial orientation in Spain.

Table 41 Simple Linear Regression of the Structural Dimension on entrepreneurial orientation in Spain

Model Summary					**Parameter Estimates**			
R	**R Square**	**Adjusted R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.259	0.067	0.061	11.361	0.001	**Constant**	3.720	16.983	0.000
					b1	0.161	3.371	0.001
Dependent Variable: entrepreneurial orientation The independent variable is: Structural Dimension								

Table 41 shows the value of R Square = 0.067, which means that the independent variable (the structural dimension) was able to explain 6.7% of the dependent variable (entrepreneurial orientation) changes in Spain. The model is statistically significant, where the test statistic was smaller than the significance level p-value = 0.001 <α = 0.05, indicating the existence of a statistically significant effect of the structural dimension on entrepreneurial orientation in Spain.

The results also showed that the regression model constant is positive and significant because p-value = 0.000 <α = 0.05 and its value is 3.720, while the value of the parameter b1 = 0.161 which is positive and significant because p-value = 0.001 <α = 0.05 .Accordingly, the regression equation: $Y = 0.161\ X + 3.720$. The regression constant means that entrepreneurial orientation is equal to 3.720 when there is no structural dimension.

le 42 Simple Linear Regression of the Cognitive Dimension on entrepreneurial orientation in Spain

Model Summary					Parameter Estimates			
R	**R Square**	**Adjusted R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.262	0.069	0.063	11.654	0.001	**Constant**	3.772	18.661	0.000
					b1	0.154	3.414	0.001
Dependent Variable: entrepreneurial orientation The independent variable is: cognitive Dimension								

Table 42 shows the value of R Square = 0.069, which means that the independent variable (cognitive dimension) was able to explain 6.9% of the dependent variable changes (entrepreneurial orientation) in Spain. The model is statistically significant where the test statistic was smaller than the significance level p-value = 0.001 <α = 0.05, indicating the existence of a statistically significant effect of the cognitive dimension on entrepreneurial orientation in Spain.

The results also showed that the regression model constant is positive and significant because p-value = 0.000 <α = 0.05 and its value is 3.772, while the value of the parameter b1 = 0.154 which is positive and significant because p-value = 0.001 <α = 0.05, and based on the above, the regression equation of the figure: $Y = 0.154\,\mathrm{X} + 3.772$. The constant regression means that entrepreneurial orientation is equal to 3.772 when there is no cognitive dimension.

Table 43 Multiple linear regression of the structural and cognitive dimension on entrepreneurial orientation in Spain:

Model Summary					Parameter Estimates			
R	**R Square**	**Adjusted R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.285	0.081	0.070	6.944	0.001	**Constant**	3.613	15.808	0.000
					b1	0.094	1.466	0.145
					b2	0.094	1.557	0.121
Dependent Variable: entrepreneurial orientation The independent variable is: b1= Structural Dimension, b2= cognitive Dimension								

Table 43 shows the value of Adjusted R Square = 0.07, which means that the independent variables (structural dimension and cognitive dimension) were able to explain 7% of the variables of the dependent variable (entrepreneurial orientation) in Spain.

The model is statistically significant, as the test statistic was smaller than the significance level p-value = 0.001 <α = 0.05, which indicates the existence of a statistically significant effect of the structural and cognitive dimension on entrepreneurial orientation in Spain.

The results also showed that the regression model constant is positive and significant because p-value = 0.000 <α = 0.05 and its value is 3.613. The value of the parameter b1 = 0.094

which expresses the structural dimension is positive and insignificant because p-value = 0.145> α = 0.05, while the value of the parameter b2 = 0.094 which expresses the cognitive dimension is positive and insignificant because p-value = 0.121> α = 0.05.

Therefore, the regression equation from the figure: $Y = 0.094X_1 + 0.094X_2 + 3.613$, The regression constant means that entrepreneurial orientation is equal to 3.613 when there is no structural or cognitive dimension.

4.4.4 The impact of social capital on entrepreneurial orientation in Brazil:

After verifying the existence of a real statistically significant relationship between the cognitive dimension and entrepreneurial orientation in Brazil, we can study the effect, but first it is necessary to verify the linearity of the relationship between the two variables.

Table 44 The linear relationship between the cognitive dimension and entrepreneurial orientation in Brazil

		Sum of Squares	df	Mean Square	F	Sig.
Cognitive dimension *entrepreneurial orientation	Deviation from Linearity	15.056	19	0.792	0.969	0.512
Test of linearity						

The results of Table 44 show the existence of a linear relationship between entrepreneurial orientation and the cognitive dimension in Brazil, because the significance of the deviation from the linearity p-value> α = 0.05. Therefore, we accept the hypothesis which states that there is a linear relationship between the cognitive dimension and entrepreneurial orientation in Brazil.

Table 45 Simple Linear Regression of the cognitive Dimension on entrepreneurial orientation in Brazil:

Model Summary					**Parameter Estimates**			
R	**R Square**	**Adjusted R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.316	0.100	0.086	7.110	0.010	**Constant**	4.195	10.932	0.000
					b1	0.200	2.666	0.010
Dependent Variable: entrepreneurial orientation The independent variable is cognitive Dimension								

Table 45 shows that the value of the coefficient of determination R Square = 0.100 means that the independent variable (the cognitive dimension) was able to explain 10% of the changes of the dependent variable (entrepreneurial orientation) in Brazil.

The model is statistically significant, as the test statistic was smaller than the significance level, p-value = 0.01 <α = 0.05, indicating a statistically significant effect of the cognitive dimension on entrepreneurial orientation in Brazil.

The results also showed that the regression model constant is positive and significant because p-value = 0.000 <α = 0.05 and its value is 4.195. As for the value of the parameter b1 = 0.200, which is positive and significant because p-value = 0.01 <α = 0.05, and based on the above, the regression equation of the figure: $Y = 0.200X + 4.195$. The regression constant means that entrepreneurial orientation equals 4.195 when the cognitive dimension is absent.

4.5 Quadratic relationship between the dimensions of social capital and (innovation entrepreneurial orientation)

4.5.1 Quadratic relationship between the dimensions of social capital and innovation

4.5.1.1 Structural dimension

Table 46 The Quadratic Regression Model of Structural dimension Impact on Innovation

Model Summary					Parameter Estimates			
R	**R Square**	**R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.187	0.035	0.026	3.990	0.020	**Constant**	-0.435	-2.261	0.025
					b1	0.112	1.166	0.245
					b2	-0.008	-0.673	0.502
Dependent Variable: innovation The independent variable is: Structural dimension								

Table 46 shows the value of the coefficient of determination Adjusted R Square = 0.035, which means that the independent variable (structural dimension) was able to explain 3.5% of the dependent variable changes (innovation).

The model is statistically significant, as the test statistic was smaller than the significance level p-value = 0.002 <α = 0.05, indicating a statistically significant effect of the structural dimension on innovation.

The results show that the regression model constant is negative and significant, because p-value = 0.025 <α = 0.05 and its value -0.435. As for the value of the parameter b1 = 0.112, which is positive and insignificant, because p-value = 0.245> α = 0.05, the parameter value is b2 = -0.008 which is negative and insignificant, because p-value = 0.502> α = 0.05.

Based on the foregoing, the regression equation from the figure: $Y = 0.112\,X - 0.008\,x^2 - 0.435$

4.5.1.2 Relational dimension

Table 47 The Quadratic Regression Model of Relational dimension Impact on Innovation

Model Summary					Parameter Estimates			
R	**R Square**	**R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.246	0.060	0.052	6.963	0.001	**Constant**	0.153	0.345	0.730
					b1	-0.212	-1.157	0.249
					b2	0.031	1.649	0.101
Dependent Variable: innovation The independent variable is: Relational dimension								

Table 47 shows the value of the coefficient of determination Adjusted R Square = 0.060, which means that the independent variable (relational dimension) was able to explain 6% of the dependent variable changes (innovation).

The model is statistically significant, as the test statistic was smaller than the significance level p-value = 0.001 <α = 0.05, indicating a statistically significant effect of the relational dimension on innovation.

The results show that the regression model constant is positive and insignificant, because p-value = 0.730 <α = 0.05 and its value 0.153. As for the value of the parameter b1 = -0.212, which is negative and insignificant, because p-value = 0.249> α = 0.05, the parameter value is b2 = 0.031 which is positive and insignificant, because p-value = 0.101> α = 0.05.

Based on the foregoing, the regression equation from the figure: $Y = 0.212X + 0.031\,x^2 + 0.153$.

4.5.1.3 cognitive dimension

Table 48 The Quadratic Regression Model of cognitive dimension Impact on Innovation

Model Summary					Parameter Estimates			
R	**R Square**	**R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.304	0.092	0.084	11.133	0.000	**Constant**	-0.065	-0.373	0.709
					b1	-0.124	-1.389	0.166
					b2	0.024	2.214	0.028
Dependent Variable: innovation The independent variable is: cognitive dimension								

Table 48 shows the value of the coefficient of determination Adjusted R Square = 0.092, which means that the independent variable (cognitive dimension) was able to explain 9.2% of the dependent variable changes (innovation).

The model is statistically significant, as the test statistic was smaller than the significance level p-value = 0.000 <α = 0.05, indicating a statistically significant effect of the cognitive dimension on innovation.

The results show that the regression model constant is negative and insignificant, because p-value = 0.709 <α = 0.05 and its value -0.065. As for the value of the parameter b1 = -0.124, which is negative and insignificant, because p-value = 0.166> α = 0.05, the parameter value is b2 = 0.024 which is positive and significant, because p-value = 0.028> α = 0.05. Based on the foregoing, the regression equation from the figure: $Y = -0.142X + 0.024\,x^2 - 0.065$

5.8.1.4 control variables:

Table 49 Multiple square regression model of the impact of social capital dimensions on innovation with control variables (countries and number of employees)

Model Summary					Parameter Estimates			
R	**R Square**	**R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.430	0.185	0.154	5.980	0.000	**Constant**	-0.254	-0.580	0.563
					b1	0.227	2.090	0.038
					b2	-0.027	-2.150	0.033
					b3	-0.300	-1.424	0.156
					b4	0.035	1.655	0.099
					b5	-0.063	-0.561	0.575
					b6	0.013	0.971	0.333
					b7	0.062	1.089	0.277
					b8	0.064	3.735	0.000

Dependent Variable: innovation

Independent variable are: b1= the structural dimension, b2= the square of the structural dimension, b3= the relational dimension, b4= the square of the relational dimension, b5= the cognitive dimension, b6= the square of the cognitive dimension, b7= countries, b8= the number of employees

Table 49 shows the value of Adjusted R Square = 0.154, which means that the independent variables were able to explain 15.4% of the changes in the dependent variable (innovation).

The model is statistically significant where the test statistic was smaller than the level of significance p-value = 0.000 <α = 0.05, which indicates the existence of a statistically significant effect of the dimensions of social capital on innovation with control variables the number of employees and the country.

The results showed that the regression model constant is negative and insignificant because p-value = 0.563> α = 0.05 and its value -0.254. As for the value of the parameter that expresses the structural dimension b1 = 0.227, which is positive and significant, because p-value = 0.038 <α = 0.05. As for the value of the parameter expressing the square of the structural dimension b2 = -0.027, which is negative and significant, because p-value = 0.033 <α = 0.05.

The value of the coefficient expressing the relational dimension b3 = -0.300, which is negative and insignificant, because p-value = 0.156> α = 0.05. As for the value of the parameter expressing the square of the relational dimension b4 = 0.035, which is positive and insignificant, because p-value = 0.099> α = 0.05.

The value of the parameter expressing the cognitive dimension b5 = -0.063, which is negative and insignificant, because p-value = 0.575> α = 0.05. As for the value of the parameter that expresses the square of the cognitive dimension b6 = 0.013, which is positive and insignificant, because p-value = 0.333> α = 0.05. The value of the coefficient expressing the country b7 = 0.062 which is positive and insignificant because p-value = 0.277> α = 0.05. As for the value of the parameter that expresses the number of employees, b8 = 0.064, which is positive and significant because p-value = 0.000 <α = 0.05. Based on the foregoing, the equation for the regression of the figure $Y = 0.227\,X_1 - 0.027\,X_1^2 - 0.3X_2 + 0.035X_2^2 - 0.063\,X_3 + 0.013\,X_3^2 + 0.062\,X_4 + 0.064\,X_5 - 0.254$.

4.5.2 Quadratic relationship between the dimensions of social capital and entrepreneurial orientation

4.5.2.1 Structural dimension

Table 50 The Quadratic Regression Model of Structural dimension Impact on entrepreneurial orientation

Model Summary					Parameter Estimates			
R	**R Square**	**R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.255	0.065	0.057	7.767	0.001	**Constant**	3.878	8.444	0.000
					b1	0.180	0.788	0.431
					b2	-0.002	-0.060	0.952

Dependent Variable: entrepreneurial orientation
The independent variable is: Structural dimension

Table 50 shows the value of the coefficient of determination Adjusted R Square = 0.065, which means that the independent variable (structural dimension) was able to explain 6.5% of the dependent variable changes (entrepreneurial orientation).

The model is statistically significant, as the test statistic was smaller than the significance level p-value = 0.001 <α = 0.05, indicating a statistically significant effect of the structural dimension on entrepreneurial orientation.

The results show that the regression model constant is positive and significant, because p-value = 0.000 <α = 0.05 and its value 3.878. As for the value of the parameter b1 = 0.180, which is positive and insignificant, because p-value = 0.431> α = 0.05, the parameter value is b2 = -0.002 which is negative and insignificant, because p-value = 0.952> α = 0.05.

Based on the foregoing, the regression equation from the figure: $Y = 0.180\,X - 0.002\,x^2 + 3.878$

4.5.2.2 Relational dimension

Table 51 The Quadratic Regression Model of Relational dimension Impact on entrepreneurial orientation

Table 52 The Quadratic Regression Model of Relational dimension Impact on entrepreneurial orientation

Model Summary					Parameter Estimates			
R	**R Square**	**R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.187	0.035	0.026	3.991	0.020	**Constant**	4.666	4.241	0.000
					b1	-0.213	-0.468	0.640
					b2	0.040	0.856	0.393

Dependent Variable: entrepreneurial orientation
The independent variable is: Relational dimension

Table 51 shows the value of the coefficient of determination Adjusted R Square = 0.035, which means that the independent variable (relational dimension) was able to explain 3.5% of the dependent variable changes (entrepreneurial orientation).

The model is statistically significant, as the test statistic was smaller than the significance level p-value = 0.020 <α = 0.05, indicating a statistically significant effect of the relational dimension on entrepreneurial orientation.

The results show that the regression model constant is positive and significant, because p-value = 0.000 <α = 0.05 and its value 4.666. As for the value of the parameter b1 = -0.213, which is negative and insignificant, because p-value = 0.640> α = 0.05, the parameter value is b2 = 0.040 which is positive and insignificant, because p-value = 0.393> α = 0.05.

Based on the foregoing, the regression equation from the figure: $Y = -0.213\,X - 0.040\,x^2 + 4.666$

4.5.2.3 cognitive dimension

Table 53 The Quadratic Regression Model of cognitive dimension Impact on entrepreneurial orientation

Model Summary					Parameter Estimates			
R	**R Square**	**R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.342	0.117	0.109	14.750	000	**Constant**	4.294	10.362	0.000
					b1	-0.109	-0.519	0.605
					b2	0.038	1.530	0.128
Dependent Variable: entrepreneurial orientation The independent variable is: cognitive dimension								

Table 52 shows the value of the coefficient of determination Adjusted R Square = 0.117, which means that the independent variable (cognitive dimension) was able to explain 11.7% of the dependent variable changes (entrepreneurial orientation).

The model is statistically significant, as the test statistic was smaller than the significance level p-value = 0.000 <α = 0.05, indicating a statistically significant effect of the cognitive dimension on entrepreneurial orientation.

The results show that the regression model constant is negative and insignificant, because p-value = 0.000 <α = 0.05 and its value 4.294. As for the value of the parameter b1 = -0.109, which is negative and insignificant, because p-value = 0.605> α = 0.05, the parameter value is b2 = 0.038 which is positive and insignificant, because p-value = 0.128> α = 0.05.

Based on the foregoing, the regression equation from the figure: $Y = -0.109\,X - 0.038\,x^2 + 4.294$

4.5.2.4 control variables:

Table 54 Multiple square regression model of the impact of social capital dimensions on entrepreneurial orientation with control variables (countries and number of employees)

Model Summary					Parameter Estimates			
R	**R Square**	**R Square**	**F**	**Sig**		**B**	**t**	**Sig**
0.485	0.235	0.206	8.248	0.000	**Constant**	3.335	3.208	0.002
					b1	0.418	1.642	0.102
					b2	-0.040	-1.353	0.177
					b3	-0.401	-0.808	0.420
					b4	0.036	0.702	0.483
					b5	-0.017	-0.065	0.949
					b6	0.019	0.619	0.537
					b7	0.577	4.330	0.000
					b8	0.090	2.245	0.026

Dependent Variable: entrepreneurial orientation
Independent variable are: b1= the structural dimension, b2= the square of the structural dimension, b3= the relational dimension, b4= the square of the relational dimension, b5= the cognitive dimension, b6= the square of the cognitive dimension, b7= countries, b8= the number of employees

Table 53 shows the value of Adjusted R Square = 0.206, which means that the independent variables were able to explain 20.6% of the changes in the dependent variable (entrepreneurial orientation).

The model is statistically significant where the test statistic was smaller than the level of significance p-value = 0.000 <α = 0.05, which indicates the existence of a statistically significant effect of the dimensions of social capital on entrepreneurial orientation with control variables the number of employees and the country.

The results showed that the regression model constant is positive and significant because p-value = 0.002< α = 0.05 and its value 3.335. As for the value of the parameter that expresses the structural dimension b1 = 0.418, which is positive and insignificant, because p-value = 0.102 >α = 0.05. As for the value of the parameter expressing the square of the structural dimension b2 = -0.040, which is negative and significant, because p-value = 0.177 >α = 0.05.

The value of the coefficient expressing the relational dimension b3 = -0.401, which is negative and insignificant, because p-value = 0.420> α = 0.05. As for the value of the parameter expressing the square of the relational dimension b4 = 0.036, which is positive and insignificant, because p-value = 0.483> α = 0.05.

The value of the parameter expressing the cognitive dimension b5 = -0.017, which is negative and insignificant, because p-value = 0.949> α = 0.05. As for the value of the parameter that expresses the square of the cognitive dimension b6 = 0.019, which is positive and insignificant, because p-value = 0.537> α = 0.05. The value of the coefficient expressing the country b7 = 0.577 which is positive and significant because p-value = 0.000< α = 0.05. As for the value of the parameter that expresses the number of employees, b8 = 0.090, which is positive and significant because p-value = 0.026 <α = 0.05. Based on the foregoing, the equation for the regression of the figure $Y = 0.418\,X_1 - 0.040\,X_1^2 - 0.401X_2 + 0.036X_2^2 - 0.0173\,X_3 + 0.019\,X_3^2 + 0.577\,X_4 + 0.090\,X_5 + 3.335.$

4.6 T-test and Mann-Witney test

The difference between Spain and Brazil in the study variables, by means of the Independent Sample T-test for two independent samples when the condition of normal distribution of variables is met, and the Mann-Whitney test when rejecting the hypothesis of normal distribution.

Table 55 Risk-taking

Independent Samples Test										
		mean	t-test for Equality of Means							
			t	df	Sig.	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Risk-taking	**Spain**	3.671	-4.64	224	.000*	-.87482	.18855	-1.24637	-.50327
	Brazil	4.546							
* significant at the 0.05 level (2-tailed).										

Table 56 Mann-Whitney

Table 57 Mann-Whitney						
		N	**Mean Rank**	**Z**	**P-value**	**Statistical Significance**
Social Capital	**Spain**	160	107.15	-2.273	0.023	*
	Brazil	66	128.89			
Structural dimension	**Spain**	160	109.40	-1.471	0.141	NS
	Brazil	66	123.45			
Relational dimension	**Spain**	160	109.71	-1.357	0.175	NS
	Brazil	66	122.68			
Cognitive dimension	**Spain**	160	104.63	-3.181	0.001	*
	Brazil	66	135.00			
Innovation	**Spain**	157[a]	105.25	-2.254	0.024	*
	Brazil	65[b]	126.60			
entrepreneurial orientation	**Spain**	160	93.78	-5.471	0.000	*
	Brazil	66	161.30			
Innovation capacity	**Spain**	160	106.58	-2.479	0.013	*
	Brazil	66	130.27			
Proactive	**Spain**	160	93.78	-7.071	0.000	*
	Brazil	66	161.30			
The test used: Mann-Whitney, (NS): no statistically significant difference, (*): significant at P <0.05 three outliers omitted, b single outliers omitted.						

The results of Tables 54 and 55 show the existence of statistically significant real differences in both social capital and the cognitive dimension, entrepreneurial orientation and its three dimensions (Innovation capacity, risk-taking and Proactive) and innovation between the two countries.

The test statistic was smaller than the significance level p-value $<\alpha = 0.05$, and it was found that social capital and the cognitive dimension, entrepreneurial orientation and its three dimensions (innovation capacity, risk-taking and proactive) and innovation in Brazil are higher compared to Spain.

There are no fundamental differences between the two countries in the structural and relational dimension between the two countries because the test statistic is greater than the significance level p-value$> \alpha = 0.05$.

5 Discussion

We used 6 sections from the questionnaire in our dissertation, In the first section, information regarding firms. The other sections were composed of the items to measure the study constructs (social capital and its dimensions, Entrepreneurial orientation). A 7-point Likert scale ranging from 1 strongly disagrees to 7 strongly agree was utilized to measure the

constructs used in the dissertation model, except the innovation section which composed form open questions. For the control variables, literature is evident that a firm's size can influence firms' innovation and frequently utilized as control variables (Galbreath and Galvin, 2008). Therefore, countries and firm size were taken as control variables.

This research evaluated the reliability and validity of the research instrument. The Cronbach's alpha coefficients were calculated to measures the reliability of the instrument, in the field of social sciences, the survey instruments Cronbach's alpha coefficient greater than 0.70 is considered reliable in the field of social sciences (Chen et al., 2016). The results of reliability analysis revealed the Cronbach's alpha coefficient value for Social capital, innovation, and Entrepreneurial orientation is over 0.8 for each, and for the whole questionnaire is 0.911 which confirms the reliability of the research instrument.

Exploratory Factor Analysis (EFA) was utilized to evaluate the convergent and discriminant validity, and the results shown are accepTable standard loadings and significant consequent values. The KMO value for social capital was 0.889 and the sig. 0.000, with four factors, explains 68.61%. The KMO for entrepreneurial orientation was 0.861, and the sig. 0.000, with three factors, explains 64.216%. For innovation KMO = 0.486 and the sig. 0.000, with one factor, explains 31.001%. Although it slightly falls below the beyond recommended 0.50, it is close to it, Details of the results are given alongside the KMO, Eigenvalue, and % variance extracted**.**

The SMEs in the ICT sectors are constantly facing the challenges of survival and growth, the main reasons for these challenges include continuous technological up-gradation, diversified customer needs. In order to cope with these challenges, firms are continuously struggling for innovation and entrepreneurial orientation for long-term survival (M. A. Khan et al., 2020).

The results of the dissertation show that there is a relationship between social capital and innovation. The results of the Spearman correlation coefficient (Table 19) show a positive, weak, and statistically significant relationship between the independent variable (social capital and its dimensions) and the dependent variable (innovation) where the significance of the test was p-value $<\alpha = 0.05$. The linearity test (Table 21) demonstrated the linearity of the relationship between the dimensions of social capital and innovation. Regression analysis helps to study the influence of several factors on a particular phenomenon (Castanheira, 2013). The effects of each dimension of social capital respectively (structural, relational, and cognitive) on innovation have been tested using simple and multiple regression analyzes.

The results of the simple linear regression showed the effect of the structural dimension on innovation (Table 22). Positive coefficients of statistical significance at the level of 0.05 and show that the structural dimension is able to explain 3.3% of innovation changes, which made us accept the hypotheses H1.1, As shown in the Table 56, which indicate a positive effect of the structural dimension on innovation. This result is consistent with what the researchers reported (Gianiodis, Ettlie, and Urbina, 2014; Parra-Requena, Ruiz-Ortega, and Garcia-Villaverde, 2013; Tsai and Ghoshal, 1998; Zheng, 2010) who expressed the positive impact of the structural dimension by maintaining strong and frequent relationships with different contacts, accessing the largest amount of knowledge and resources, and improving their exchange and exploitation within the network. (Beltramino, N.S., García-Perez-de-Lema, D. and Valdez-Juárez, L.E., 2020). We can imagine that this could be a very discreet result, in one hand. But on the other hand, the sector we studied is very dynamic, and the innovation in processes and products/services is the *modus operandi* of the sector (Ezzi and Jarboui, 2016; Ivanov and Avasilcăi, 2014). So, this result is a contribution, we believe. But it is not so new, considering that Beltramino et al. (2020) found that structural dimension has positive and significant impacts on the innovation capacity in operations and performance of Argentinean SMEs.

The simple linear regression showed the effect of the relational dimension on innovation (Table 23), the result refers to a positive coefficient and statistically significant at the level of 0.05, and that the relational dimension is able to explain 4.9% of innovation changes, which made us accept the hypotheses H1.2. This result is consistent with other studies (Dakhli and De Clercq, 2004; Lee and Choi, 2003; Moran, 2005; Ruppel and Harrington, 2001; Sanchez-Famoso et al., 2014) who supported the idea of the positive impact of the relational dimension on innovation, through the positive role it plays, whether at the company or country level. Likewise, the study conducted by Dakhli and De Clercq (2004) confirms the existence of a positive impact of the relational dimension and trust specifically as an engine for innovation, by facilitating the exchange of information, ideas, and resources to reducing the need for oversight which wastes time and money.

Trust promotes more intensive and unrestricted cooperation and more free information sharing. The study by Vlaisavljevic, et al. (2016) refers to the relational dimension as a helper to reduce difficulties when sharing knowledge and also by reducing the fear of opportunistic behavior. Therefore, the companies that trust their partners are more willing to make efforts to share, receive and understand the knowledge that differs from what the company already knows. This means the ideas from Coleman (1990) are still up to date, especially when he explained expectations and commitments. Iturrioz et al. (2015) wrote that social capital is one of the

factors that can affect firm innovation. In our study, we are showing that firms have a relational link, based on expectation (Coleman, 1990) and reciprocity (Putnam, 1993) for each part to reach innovation as an output.

The results of the simple linear regression of the cognitive dimension on innovation (Table 24) shows a positive coefficient of statistical significance at the level of 0.05, and the relational dimension is able to explain 7.2% of innovation changes, which made us accept the hypothesis H1.3 - a positive effect of the cognitive dimension on innovation. If relational dimension is based on personal contact (Nahapiet and Goshal, 1995), cognitive dimension is much more subtle, because we are dealing with shared vision, goals, paradigms (Lins et al., 2017), and even symbols and representations (Tsai and Ghoshal, 1998). And on ITC industry innovation can be a product or a process. We mean, it is the same to say that some subtle like a shared vision can become a product, even a tangible one.

This finding is consistent with what the researchers like Donnellon, Gray, and Bougon (1986); Ginsberg (1994); Garcia-Morales, Ruiz Moreno, and Llorens-Montes (2006); Pearce and Ensley, (2004). These studies confirmed that the cognitive dimension has a positive effect because it helps to understand changing conditions in the environment and improve organizational responses and its impact on the organizational competitive advantage. The study of (Zhang, Liu, and Choi, 2020) confirmed that the cognitive dimension has a positive impact on the speed of innovation, by enhancing the values, vision, and common goals of the participants in the innovation process, and thus reduces conflicts. Therefore, managers must encourage and motivate employees to form common standards that will positively reflect on the entire innovation process.

Table 58 Regression results for testing hypotheses

Hypothesis	Details	R	R Square	F	B	T	Sig	Remarks
1.1	SD > Inn	0.182	0.033	7.546	0.049	2.747	0.007	Accepted
1.2	RD > Inn	0.220	0.049	11.118	0.087	3.334	0.001	Accepted
1.3	CD > Inn	0.268	0.072	17.065	0.070	4.131	0.000	Accepted
Note: SD (Structural Dimension), RD (Relational Dimension), CD (Cognitive Dimension), INN (Innovation)								

Table 25 refers to the results of the multiple regression equation figure ($Y = -0.005X_1 + 0.037X_2 + 0.061X_3 - 0.533$), which indicates that there is a statistically significant effect between the dimensions of social capital and innovation, as the three dimensions could explain 6.6% of the innovation changes. after adding the control variables (country - the size of the company) (Table 26) the model shows a statistical significance at the

level of 0.05, where the three dimensions of capital could explain 13.5% of the innovation changes.

These findings support the argument that the dimensions of social capital constitute a set of coherent indicators and operate in a similar way. However, this is not the same conclusion as some previous empirical studies (Portes, 1998; Woolcock, 1998; Dakhli and De Clercq, 2004) wich suggest that the dimensions of social capital do not necessarily constitute a set of coherent indicators. Rather, each dimension may have a different effect from the other. Specifically, Dakhli and De Clercq (2004) failed to produce a social capital index that covers all three dimensions because their results do not show statistically significant correlations between the elements measuring the relational dimension and the civic behavior standards (the cognitive dimension).

The results of Table 33 Spearman correlation coefficient about the Spain sample, show a positive, weak, and statistically significant relationship between the dimensions of social capital and innovation. The linearity test (Table 35) presents the existence of a linear relationship between the three dimensions and innovation. The effects of each of the dimensions (structural, relational, and cognitive) Tables (36 - 37 - 38) respectively, were tested using simple linear regression. The results of all dimensions showed that the coefficients are positive and statistically significant at the level of 0.05, which indicate a positive impact of the dimensions and innovation, who were able to explain innovation's changes by 3.2% for the structural dimension, 4.2% for the relational dimension, and 4.7% for the cognitive dimension. (Table 39) refers to the results of the multiple regression equation ($Y = 0.007X_1 + 0.044X_2 + 0.033X_3 - 0.533$), which indicates that there is a statistically significant effect between the dimensions of social capital and innovation in Spain, as the three dimensions of capital could explain 3.8% of the innovation changes.

On the other hand, Brazilian sample, the Spearman correlation coefficient (Table 34) shows that there is no relationship between the dimensions of social capital and innovation, because p-value> $\alpha = 0.05$. This finding is consistent with a study by Faccin, Genari, Macke (2017) t that showed that social capital does not directly affect innovation, but indirectly through competitive advantage. Maurer, Bartsch, and Ebers (2011) argued that the existence of social connections does not necessarily imply the existence of innovation and social capital does not directly affect innovation in networked companies. The results of the Brazilian sample differ from previous experimental studies may be because the sample is small and the time period and sector differ from the previous studies.

Our results of the whole sample, and the Spanish sample, are still consistent with previous theoretical and experimental studies (Nichols, 1996; Knack and Keefer, 1997; Paxton,

1999; Putnam, 2000; Beugelsdijk and Van Schaik, 2005; Beltramino, N.S., García-Perez-de-Lema, D. and Valdez-Juárez, L.E., 2020; Omamo, A.O., Rodrigues, A.J. and Muliaro, W.J., 2020; Nawinna, D. and Venable, J.R., 2019.) which discuss social capital at the international level as regression analyzes of this paper show a positive relationship between social capital and innovation at the country level.

According to the Spearman correlation coefficient for each dimension of social capital with entrepreneurial orientation (Table 19), the results show a positive, weak, and statistically significant relationship between social capital and its dimensions (structural and relational) and entrepreneurial orientation, while a positive, intermediate and statistically significant relationship between the cognitive dimension and entrepreneurial orientation. The linearity test (Table 27) that there is a linear relationship between the three dimensions of social capital and innovation. The effects of each dimension of social capital on entrepreneurial orientation were tested using simple and multiple regression analyzes.

The results of the simple linear regression showed the effect of the structural dimension on entrepreneurial orientation (Table 28) the there is a statistically significant effect at the level of 0.05, and the structural dimension is able to explain 6.5% of the entrepreneurial changes. This led us to accept the H2.2 hypotheses, As shown in the Table 57, which indicate a positive relationship between the structure dimension and entrepreneurial orientation. This finding is consistent with what the researchers reported networks formed by strong ties, cohesion, and trust, promote entrepreneurial orientation (Hernandez-Carrion et al., 2017; Jiang et al., 2018; Kaasa, 2009; Luu and Ngo, 2019; Rodrigo-Alarcon et al., 2018) because the dense networks of strong ties allow for the transmission of tacit knowledge and identification of further opportunities" (Rodrigo-Alarcon et al., 2018, p. 196).

The results of the simple linear regression showed the effect of the relational dimension on entrepreneurial orientation (Table 29) there is a statistically significant effect at the level of 0.05, and the relational dimension is able to explain 3.2% of the entrepreneurial changes. This led us to accept the H3.1 hypothesis, As shown in the Table 57, which indicates a positive relationship between relational dimension and entrepreneurial orientation. This finding is consistent with (Cho and Lee, 2018; Rodrigo-Alarcon et al, 2018; Stam et al., 2014) discussed the importance of paying attention to relational skills in social organizational networks in order to increase the entrepreneurial orientation, and the importance of Trust among network actors, and the belief that they will not act opportunistically (Nahapiet and Ghoshal, 1998), can increase entrepreneurs' tacit knowledge and information and support entrepreneurial orientation.

The results of the simple linear regression showed the effect of the Cognitive dimension on entrepreneurial orientation (Table 30). there is a statistically significant effect at the level of 0.05, and the relational dimension is able to explain 10.8% of the entrepreneurial changes. Which made us accept the H2.3 hypotheses, As shown in the Table 57, which indicate a positive relationship between cognitive dimension and entrepreneurial orientation. This result is consistent with what the researchers reported. They discussed the positive impact of cognitive dimension because it helps to access and exploit tacit knowledge allowing the company to excel in performance and entrepreneurial orientation, (Gedajlovic et al. 2013; Davidson and Wiklund 1997; Giannetti and Simonov 2004, Rodrigo-Alarcón, J., Parra-Requena, G. and Ruiz-Ortega, M.J., 2020) and internalizing the resources embedded in-network with their resources leveraging strategy plays a critical role in obtaining superior performance (Symeonidou and Nicolaou, 2018).

Table 59 Regression results for testing hypotheses

Hypothesis	Details	R	R Square	F	B	T	Sig	Remarks
2.1	RD > EO	0.178	0.032	7.258	0.173	2.694	0.008	Accepted
2.2	SD > EO	0.255	0.065	15.600	0.167	3.950	0.000	Accepted
2.3	CD > EO	0.328	0.108	26.999	0.207	5.196	0.000	Accepted
Note: SD (Structural Dimension), RD (Relational Dimension), CD (Cognitive Dimension), EO (Entrepreneurial orientation)								

Table 31 refers to the results of the multiple linear regression equation that we obtained ($Y = 0.074X_1 - 0.088X_2 + 0.209X_3 + 3.825$), there is a statistically significant effect at the level of 0.05, between the three dimensions of capital could explain 11.1% of the changes in entrepreneurial orientation. These results are supported. After adding the control variables (country - the size of the company) (Table 32) the model shows a statistical significance at the level of 0.05, where the three dimensions of capital could explain 20.9% of the entrepreneurial orientation changes. The result provides support to the hypothesizes that social capital affects positively entrepreneurial orientation, these findings are in line with some recent studies (Al-Henzab, Tarhini, and Obeidat, 2018;;; Gao, Ge, Lang, and Xu, 2018; García-Villaverde, Rodrigo-Alarcón, Parra-Requena, and Ruiz-Ortega, 2018; Jiang et al., 2018; Kollmann et al., 2019; Luu and Ngo, 2019) who discussed that social ties affect on innovation capacity, proactive, and risk-taking, so social capital is essential to entrepreneurial orientation.

About Spain's sample, the results of the Spearman correlation coefficient (Table 33) show a positive, weak, and statistically significant relationship between social capital and its dimensions (structural and cognitive) entrepreneurial orientation, while there is no relationship between the relational dimension and entrepreneurial orientation.

The linearity test demonstrated the existence of a linear relationship between the two dimensions of social capital and innovation (Table 40) The effects of structural dimension and cognitive dimension on entrepreneurial orientation were tested using simple regression analyzes Tables (41-42) respectively. The results of the simple linear regression of the structural and cognitive dimensions showed that positive coefficients of statistical significance at the level of 0.05, which made us accept the hypotheses H2.2, H2.3, which indicate a positive relationship between the structural dimension and cognitive dimension on entrepreneurial orientation, where the structural dimension is able to explain 6.7%, and the cognitive dimension is able to explain 6.9% of the changes in entrepreneurial orientation in Spain. Table 43 refers to the results of the multiple regression equation ($Y = 0.094X_1 + 0.094X_2 + 3.613$), there is a statistically significant effect at the level of 0.05, and the two dimensions can explain 7% of the changes in entrepreneurial orientation in Spain.

The Brazil's sample, the results of the Spearman correlation coefficient (Table 34) showed a positive, weak, and statistically significant relationship between the cognitive dimension of social capital and entrepreneurial orientation, and there is no relationship between the relational and structural dimensions with entrepreneurial orientation.

And the linearity test proved the existence of a linear relationship between the cognitive dimension and entrepreneurial orientation (Table 44). The effects of the cognitive dimension on entrepreneurial orientation were tested using simple regression analyzes. Table 45 The results of the simple linear regression showed that positive and statistically significant coefficients coincide at the level of 0.05, which made us accept the hypotheses H2.3 that indicate a positive effect of the cognitive dimension on entrepreneurial orientation, and it is able to explain 10% of the changes in entrepreneurial orientation in Brazil.

The results of the quadratic regression (Table 46) that there is a statistically significant effect of the structural dimension on innovation at the level of 0.05, the structural dimension is able to explain 3.5% of innovation changes, the quadratic equation was ($Y = 0.112\ X - 0.008\ x^2 - 0.435$), while Table 47 represents that there is a statistically significant effect of the relational dimension on innovation at the level of 0.05, the relational dimension is able to explain 6% of innovation changes, the quadratic equation was ($Y = 0.212X + 0.031\ x^2 + 0.153$), finally Table 48 shows that there is a statistically significant effect of the cognitive dimension on innovation at the level of 0.05, the cognitive dimension is able to explain 9.2% of innovation changes,, the Quadratic equation was ($Y = -0.142X + 0.024\ x^2 - 0.065$), (Table 49) refers to the results of the multiple quadratic regression equation that we obtained ($Y = 0.227\ X_1 - 0.027\ X_1^2 - 0.3X_2 + 0.035X_2^2 - 0.063\ X_3 + 0.013\ X_3^2 + 0.062\ X_4 + 0.064\ X_5 - 0.254$),

there is a statistically significant effect at the level of 0.05, between the three dimensions of capital could explain 15.4% of the changes in innovation.

The results of the quadratic regression Table 50 show that there is a statistically significant effect of the structural dimension on entrepreneurial orientation at the level of 0.05, the structural dimension is able to explain 6.5% of entrepreneurial orientation changes, the quadratic equation was (: $Y = 0.180\,X - 0.002\,x^2 + 3.878$), while Table 51 represents that there is a statistically significant effect of the relational dimension on entrepreneurial orientation, at the level of 0.05, the relational dimension is able to explain 3.5% of entrepreneurial orientation changes, the quadratic equation was ($Y = -0.213\,X - 0.040\,x^2 + 4.666$), finally Table 52 show that the there is a statistically significant effect of the cognitive dimension on entrepreneurial orientation, at the level of 0.05, the cognitive dimension is able to explain 11.7% of entrepreneurial orientation changes, the Quadratic equation was ($Y = -0.109\,X - 0.038\,x^2 + 4.294$). Table 53 refers to the results of the multiple quadratic regression equation that we obtained ($Y = 0.418\,X_1 - 0.040\,X_1^2 - 0.401X_2 + 0.036X_2^2 - 0.0173\,X_3 + 0.019\,X_3^2 + 0.577\,X_4 + 0.090\,X_5 + 3.335$), there is a statistically significant effect at the level of 0.05, between the three dimensions of capital could explain 20.6% of the changes in entrepreneurial orientation.

This is a contribution from our study because the studies we based on social capital and EO (; Gao et al., 2018; Masa'deh et al., 2018; Kollmann et al., 2019; Rodrigo-Alarcon et al., 2018; Luu and Ng, 2019) do not test this quadratic effect. Although, the absence of a study before about quadratic effect, this effect makes sense, because it is not possible to improve social capital without improving costs derived from keeping relationships (time, for example), considering social capital is a product of social interaction (Nahapiet and Ghoshal, 1998; Korkeila and Hamari, 2020). And entrepreneurial orientation means the exploitation of emerging opportunities (Wales, 2016) and is connected to innovation (Dess and Lumpkin, 2005, Covin et al., 2020; Kraus et al., 2019; Martins and Perez, 2020). In that sense, EO could be expressed as the link between the entrepreneur and her/his competitive context; and social capital could be expressed as the link between the entrepreneur and her/his social (and even competitive) context. So, it seems that it is possible to find more opportunities to innovate, numerically talking, than to find opportunities to improve social links. Our results seem to corroborate this idea.

In order to compare the two countries, we conducted t-tests when the variables show a normal distribution and Mann-Whitney for the abnormal variables. The results of t-tests (Table 54) show that there are real differences of statistical significance at the level of 0.05, between the two countries, as the results in Spain, showed higher values in risk-taking. the

same happened in Mann-Whitney Table 55 show that there are real differences between the two countries, as the results in Spain, showed higher values in social capital, cognitive dimension, entrepreneurial orientation, innovation capacity, and proactivity In contrast, there are no fundamental differences between the two countries in structural dimension and the relational dimension. So, our study provides another contribution in the sense of showing that there is a country effect. However, this effect is in some dimensions of social capital, but not in all the social capital. As Basco et al (2019) showed that countries can have an institutional context quite different that can affect EO. This institutional context also can affect local context and, in that sense, the social context.

6 Conclusion, limits and recommendations

The continuous acceleration in technological development and competition puts SMEs in a continuous race to achieve the necessary development for survival and development. This thesis examined the effect of social capital on both innovation and entrepreneurial orientation.

We used seminal literature (Bourdieu, 1986, Coleman, 1988) and also more applied papers (Covin et al., 2020; Kraus et al., 2019; Martins and Perez, 2020). We conclude that dimensions described by Nahapiet and Goshal (1998) can be considered a step forward to the first papers by (Bourdieu, 1986, Coleman, 1988), because Nahapiet and Goshal (1998) became operative the concept of social capital.

We studied these effects were studied through a sample of 226 companies in the information and communication sector in Cluster Barcelona / Spain and Santa Catarina / Brazil. In this context, the firm's location and the number of workers in the firms were used as control variables. The results of our study showed the impact of the dimensions of capital in a positive, but uneven way, on both innovation and the entrepreneurial orientation, as the cognitive dimension led the largest influence on the two variables, and the relational dimension came followed by the structural dimension in relation to innovation and vice versa with regard to the entrepreneurial orientation. We can call attention for some contributions form our study.

We found a discreet impact (less than 10%) of each social capital dimension in innovation. But in all dimensions this impact was significative. We studied a very dynamic sector – ICT – strongly based on innovation (Ezzi and Jarboui, 2016; Ivanov and Avasilcăi, 2014), and social capital is not enough to explain innovation (Aragón et al., 2014), but it can facilitate innovation (Adler and Kwon, 2002b; Hauser et al., 2007), especially in clusters (Cantner et al., 2010; Malecki, 2012) as we studied. We contributed by showing how much social capital can improve innovation.

Another contribution was to test a quadratic effect. As we presented before, many researches pointed out relations between social capital and EO (Gao et al., 2018; Masa'deh et al., 2018; Kollmann et al., 2019; Rodrigo-Alarcon et al., 2018; Luu and Ng, 2019). We also test the same effect. But we showed that there is also a quadratic effect because it Is not possible to increase social capital without increasing firm investments in resources like reputation and or time. And EO is much more connected to firm market context (Wales, 2016) and innovation (Dess and Lumpkin, 2005, Covin et al., 2020; Kraus et al., 2019; Martins and Perez, 2020). In that case, increasing innovation in the ICT industry means increasing financial performance (Gërguri-Rashiti et al. 2017).

We believe that another contribution is to present a country effect. This is not a very new effect considering the comparative study presented by Basco et al (2019). Our contribution is to show that the different institutional contexts can affect on a diversified way the three dimensions of social capital. Although our results about EO are similar to Basco et al. (2019) ones, we pointed out the all three dimensions have a different impact from the institutional context.

Our research provides some implications to practitioners. We studied SME in ICT industry. We showed that walking alone is worst than be accompanied in this industry, specifically because we are dealing with innovation. In this industry, a strong tie between firms allows knowledge transfer and identification of opportunities (Rodrigo-Alarcon et al., 2018). But there is a limitation in the sense of the size of that network (quadratic effect). So, be a network is great but must not be so big.

In terms of public policies, we studied two regions that have received public support. Both Barcelona region (Spain), and Santa Catarina region (Brazil) were developed from public policies to foment ICT industries, the first in the 1980' and the second in the 1960´. Both started linking to universities, derived from the spill-over process that is common in this kind of context. We can say that this public policy works out, but it is necessary not just to open a physical infrastructure, but also connecting universities and local players to create a space to improve social capital and EO.

Finally, as a contribution to teaching this theme, we think that is important to say that these constructs social capital, EO, and innovation are close, and maybe, even more, when we are talking about ICT industry clusters. Besides the fact that this is a soft industry, with high levels of online communication, be in a cluster is still important to generate social capital.

Since it is somewhat rare to conduct a complete study that covers all aspects of a particular topic, this thesis has some limitations that future research may address. It used samples from large publicly traded companies in only two developed countries. In this sense, future research can be achieved in a sample that includes sectors of other countries. The results may be different. Moreover, future studies may rely on more indicators as independent variables such as capital and human capital.

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Anexo A

Questionnaire applied in Brazil, adapted from Molina-Morales et al. (2008)

UNIVERSIDADE DE BRASÍLIA
FACULDADE DE ECONOMIA, ADMINISTRAÇÃO E CONTABILIDADE
PROGRAMA DE PÓS-GRADUAÇÃO EM ADMINISTRAÇÃO

FACULTAD DE CIENCIAS JURÍDICAS Y ECONÓMICAS
PROGRAMADEDOCTORADO ENDESARROLLOLOCALY COOPERACIÓN INTERNACIONAL

QUESTIONNAIRE ON A MODEL OF SOCIAL CAPITAL, INNOVATION AND SPIN-OFF IN THE CLUSTER - TICSANTA CATARINA – BRAZIL

Nº questionário	

STUDY DEVELOPED BY THE DEPARTMENT OF ADMINISTRATION OF THE UNIVERSITY OF BRASÍLIA (BRAZIL) AND THE DEPARTMENT OF BUSINESS ADMINISTRATION AND MARKETING OF UNIVERSITAT JAUME I DE CASTELLÓN (SPAIN)

This research is part of the doctoral thesis in Administration (area: Innovation and Strategy) at the University of Brasilia (UNB-Brazil) and at the Universitat Jaume I (UJI-Spain), by Flávio Manoel Coelho Borges Cardoso, supervised by professors Dr. Maria Teresa Martínez-Fernández (UJI-Spain) and Dr. Valmir Emil Hoffmann (UNB-Brasil) with the title "Social Capital, Innovation and Spin-Off in Clusters. A study on the influence of the structure and nature of Social Capital in the Information Technology Sector in Brazil and Spain".

Good day Afternoon. WE WOULD THANK YOU VERY MUCH FOR YOUR COLLABORATION by answering the questions that appear below, whose objective is to develop a study on the role of social capital (CS) in the interorganizational relationship between Parent Company and Spin-Off, and in turn, how it influences the business results in the Arrangement Local Productive (APL) ICT of Santa Catarina - Brazil. Regarding the information you provide us, we guarantee total confidentiality and anonymity. The publication of the results of this research will offer aggregated data and in no case will it make any reference to data or information from a separate company. Finally, this study is not for profit or commercial purposes, being purely academic and its dissemination will be in academic journals and publications.

QUESTIONNAIRE INDEX

0. COMPANY IDENTIFICATION

Company Name:

Telephone:

Address:

Postal Code:

County:

State:

Name of person answering the questionnaire:

Position in the company:

contact e-mail:

Specific type of activity related to your company's Information and Communication Technology - ICT (such as software, manufacturing, maintenance, web systems, etc.)

Company size (number of employees):

1. CLASSIFICATORY VARIABLES

APL BELONGING - ICT Santa Catarina: Assess your company's sense of belonging to the APL by answering these two questions:

1.1.- Do you consider that your company belongs to the APL - TIC of Santa Catarina?:

0 No **1 Yes**

1.2.- Level of belonging to APL.

Disagreement Agreement

Do you think, in general, that your most immediate competitors, your main suppliers and the various institutions that support your activity are those in a close geographic area?						
1	2	3	4	5	6	7

MOTHER-COMPANY RELATIONSHIP SPIN OFF

1.3. – Was any company created based on your company (is it a parent company)? See definitions in the Questionnaire Instructions document. If so, continue to the next question, if not, go to part 2.

0 No 1 Yes

1.4 Identify your spin-off:

1.5 If so, does your company have relations with it?

0 No 1 Yes

1.6 If so, please indicate the intensity of this relationship.						
1	2	3	4	5	6	7

1.7 What is the% stake in this company?						
1	2	3	4	5	6	7

Indicate the 3 companies you most relate to.

Indicate the 3 institutions (public or private) with which you most relate.

IMPORTANT NOTE

Option A) If you are a parent company, answer the following questions about the relationship with your spin-off (if it is related to it).

Option B) If you are a parent company and have no relationship with your spin-off, answer the same questions with reference to the company with which you most relate at APL - TIC Santa Catarina (supplier, customer, distributor).

Option C) If you are not a parent company, refer to the company with which you have the most (supplier, customer, distributor).

2.- (STRUCTURAL DIMENSION).

Mark the main source of information and knowledge for your company

Disagreement Agreement

2.1 Exchanges of resources, information and more between your company and your spin-off (or the company with the most relationship) often have similar (redundant) content.						
1	2	3	4	5	6	7

2.2 Between your company and your spin-off (or company with more relationship) advice, information or any input that serves to make important decisions is given. We can consider that it is a more or less closed circle.						
1	2	3	4	5	6	7

2.3 In general, your company gets more relevant information from its spin-off (or company with more relationship) and not so much from people, companies or institutions in other economic, industrial or zone circles.						
1	2	3	4	5	6	7

2.4 In case you have to choose between obtaining resources and information from your spin-off (or company with more relationship) or from other areas, if a priori the expectations are the same as to its usefulness, you systematically opt for your spin-off options (or company with more relationship) compared to other options?						
1	2	3	4	5	6	7

3.- (RELATIONAL DIMENSION).

Disagreement Agreement

3.1 Very often, he keeps in touch with his spin-off (or the company with the most relationship), receiving advice, information or any relevant input for his company (value with 7 a daily frequency, and 1 when it is only sporadic).						
1	2	3	4	5	6	7

3.2 Do you share certain common goals or seek the common good with your spin-off (or company with more relationship) located in the same area / district?						
1	2	3	4	5	6	7

3.3 In general, does your company maintain close social relationships with your spin-off (or company with the most relationship) located in the same area / district (eg participate with your spin-off in social events, family or business celebrations)?						
1	2	3	4	5	6	7

3.4 Is there frequent mobility of executives, technicians and other employees between your company and your spin-off (or company with more relationship)?						
1	2	3	4	5	6	7

4.- (COGNITIVE DIMENSION).

4.1 The information, knowledge, advice your company receives from your relations with your spin-off (or company with more relationship) helps you in solving problems, coordinating your company's functions.						
1	2	3	4	5	6	7

4.2 The information, knowledge, advice that your company receives from its relations with its spin-off (or the company with the most relationship) is able to increase the organization's capacity for decision making.						
1	2	3	4	5	6	7

4.3 The transfer of quality information between your company and your spin-off (or the company with the most relationship) benefits your company by increasing the number of its conduct options and specifying its long-term forecasts.						
1	2	3	4	5	6	7

4.4 In general, the relationships with your spin-off (or company with more relationship) provide you with a great deal of tacit knowledge about technology (know-how based on experience or intuition).						
1	2	3	4	5	6	7

5.- (RELATIONAL DIMENSION).

Value the existence of norms and values in your relationship with spin-off (or company with more relationship).

Disagreement Agreement

5.1 In general, it considers that in its relations with its spin-off (or company with more relationship), there is a high degree of trust, that is, at first no one tries to take advantage of the relationship, even when opportunities arise, that is, does anyone act opportunistically?						
1	2	3	4	5	6	7

5.2.- Do you consider that your reputation affects your spin-off (or company with more relationship), and in turn, hers affects your company? For example, if your spin-off (or company with more relationship) does not fulfill commitments to customers, does this have an impact on your company? And upside down?						
1	2	3	4	5	6	7

5.3 Do you believe that the cooperative relations that your company currently has with its spin-off (or company with more relationship) will continue in the future (reciprocity)? In other words, when your company does your spin-off (or company with more relationship) a favor, do you expect it to be rewarded in the future?						
1	2	3	4	5	6	7

5.4 In general, companies do not resort to contracts to regulate their exchanges (non-contractual). In relations with your spin-off (or company with more relationships), if there were conflicts, would these normally resolve themselves in a friendly manner, without reaching judicial demands that could harm the interests of the other (non-judicial)?						
1	2	3	4	5	6	7

6.- INNOVATION

An innovation can be defined as an idea, practice or object that is perceived as new by the organization and that is successfully implemented and used in the market.

6.1 Number of patents or legal rights to protect innovation granted to your company as a result of relationships with your spin-off (or company with more relationship).

6.2 Number of R&D contracts with research institutions in the last 5 years, as a result of the relationships with its spin-off (or company with more relationship).

6.3 Number of products / services offered by your company in the last 5 years.

6.4 Average number of new products / services introduced in one year (last 5 years), as a result of relations with its spin-off (or company with more relationship).

6.5 Number of different technologies introduced in your company during the last 5 years, as a result of relationships with your spin-off (or company with more relationship) (process, management, etc.).

6.6 Number of quality marks, awards or some type of certification that your company has won (of product or company) during the last 5 years, as a result of the relations with your spin-off (or company with more relationship).

6.7 Did your company introduce a control system for 1 production / services, as a result of the relations with its spin-off (or company with more relationship)? (Value 1 = none, 7 = many).

1	2	3	4	5	6	7

6.8 Value your company's level of innovation in relation to your competitors. Its technology is superior to that of its competitors.

1	2	3	4	5	6	7

6.9.- Technology can be considered as the basis of your company's competitive advantage.

1	2	3	4	5	6	7

6.10.- Your investment in R&D is higher than that of your competitors.

1	2	3	4	5	6	7

6.11.- Your company is faster than its competitors regarding the development of new products / services.						
1	2	3	4	5	6	7

6.12.- Your company is faster than its competitors regarding the launch of new products / services on the market						
1	2	3	4	5	6	7

6.13.- Customers positively value the innovations carried out by their company						
1	2	3	4	5	6	7

7.- COMMITMENT TO LOCAL INSTITUTIONS.

Examples of local institutions: Business Associations (ACATE, ASSESPRO-SC, SIESC, etc.); Professional Associations, Training and Research Centers (Universities or R&D Centers); Public Administration (City Halls, Government, public agencies, etc.).

7.1 Number of business or professional associations or institutions to which your company belongs or individually any member of it.

7.2 Number of positions (president, board member, area officer, etc.) that your company has members in some of these institutions in the last 5 years.

7.3 Do you consider your relations with these institutions important to obtain knowledge about new products, processes and services, etc.? (1 = not at all important, 7 = very important).						
1	2	3	4	5	6	7

7.4.- Does your company or your employees obtain meaningful and important information for your company through business and professional associations?						
1	2	3	4	5	6	7

7.5.- Is your relationship with these institutions or research centers intense and does it consider it significant for your product / process / service innovation process?						
1	2	3	4	5	6	7

7.6.- Regarding your competitors, do you consider that your relations with these local institutions are more frequent and closer?						
1	2	3	4	5	6	7

8.- ENTREPRENEURIAL ORIENTATION

(Innovation Capacity, Risk-taking; Proactivity)

Innovation Capacity

8.1 Constantly develops new products / services or new product / service lines, or promotes changes in products / services.						
1	2	3	4	5	6	7

8.2 Develops administrative or production or product and market innovations.						
1	2	3	4	5	6	7

8.3 Your company invests in innovation through R & D and in continuous improvement or in the search for technological leadership.						
1	2	3	4	5	6	7

8.4 In your company there are many people committed to innovation.						
1	2	3	4	5	6	7

8.5 Your company is dedicated and supports new ideas, experiments and creative processes.						
1	2	3	4	5	6	7

8.6 - Your company develops innovative initiatives that are difficult to imitate by competitors.						
1	2	3	4	5	6	7

Risk-taking

8.7 Your company tends to take risks, that is, it carries out operations or develops projects that can be characterized as high risk.						
1	2	3	4	5	6	7

8.8 Managers of your company have a little conservative view in decision making, that is, they have an aggressive attitude that seeks to seize opportunities or achieve organizational goals.						
1	2	3	4	5	6	7

8.9 Your company has an attitude of taking financial risks like borrowing money						
1	2	3	4	5	6	7

8.10 Your company has a posture of taking risks in business, where greater actions are needed to achieve organizational objectives.

1	2	3	4	5	6	7

Proactivity:

8.11 Your company performs continuous market monitoring to identify the businesses that can be acquired, environmental changes and the future needs of customers.

1	2	3	4	5	6	7

8.12 Your company is often one of the pioneers in the introduction of new products / services and administrative or production technologies, initiating actions that its competitors respond to. In other words, it is a creative and innovative company.

1	2	3	4	5	6	7

8.12 Your company is often one of the pioneers in the introduction of new products / services and administrative or production technologies, initiating actions that its competitors respond to. In other words, it is a creative and innovative company.

1	2	3	4	5	6	7

8.13 Your company adopts decentralized and participatory control procedures aimed at solving problems and eliminating products at advanced stages of its life cycle.

1	2	3	4	5	6	7

8.14 - In your organization there is availability and accessibility for people with skills in technology, resources and equipment to develop new products and services in multiple technologies.

1	2	3	4	5	6	7