

Doutoramento

Business and Management Studies

Marketing and Strategy

THE IMPACT OF CEO CHARACTERISTICS ON ORGANIZATIONAL CULTURE AND ON COLLABORATION NETWORKS

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2019





**THE IMPACT OF CEO CHARACTERISTICS ON
ORGANIZATIONAL CULTURE AND ON
COLLABORATION NETWORKS**

by

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Doctoral Thesis in Business and Management Studies
Marketing and Strategy

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2019

BIOGRAPHICAL NOTE

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ACKNOWLEDGEMENTS

First of all, I would like to thank to my tireless supervisor, Professora Doutora Raquel Meneses who has supported me not only academically, but in the last three months if it wasn't her, this research hardly would have reached to an end. I also must thank her for all her availability, dedication, critical comments, guidance and encouragement through the last three years.

I shall also thank my family, in particular my lovely children, my mother and my husband for all their love, support and permanent encouragement, even during the most difficult times.

I would also like to say a word of thanks to all my friends, and other family who have been very comprehensive to my absences, and always helping me to achieving this goal.

Still, I would like to thank all the colleagues and researchers, in particular Mara, who have contributed with their constructive comments, ideas and feedback so that this work was enriched.

Finally, I would like to thank all the people who have directly or indirectly, personal, professional and academic helped me to achieve this goal.

TO ALL OF YOU MY SINCERE ACKNOWLEDGMENTS!!

ABSTRACT

Research on how CEOs' characteristics and social capital may influence the organization and their ability to establish networks (internal and external), remained unexplored. Therefore, this research aimed at trying to understand how CEOs' personality traits, using the Big Five Framework, observable variables (age, formal education, management diversity and management tenure) and social capital, impact the organization through culture and silo effect, and consequently the firm ability to establish and develop networks.

The effect of CEOs' characteristics in the organization was studied taking into consideration the potential influence of the Top Management Team (TMT), since their characteristics may limit or enhance the CEO managerial role. Industry effect was also considered since research revealed that a firm in a sector with sustained growth tend to offer greater managerial discretion to both CEOs and TMT (Hutzschenreuter & Kleindienst, 2013). Additionally, it was studied the effect of firm size as smaller firms tend to be more flexible and allow CEOs to have greater decision power, as larger companies usually have formal, centralized and hierarchical structures inhibiting the CEO role.

Using a survey data from 185 small-to-medium sized firms from the Accommodation and Food, Beverage and Tobacco sectors, the first a fast growing sector and the latter a slow growing one, it was tested and found general support for a theoretical model in which CEO personality traits, in particular conscientiousness, openness to experience and extraversion, and bonding social capital influence organizational culture, and observable variables like education, management tenure and management diversity, and culture influence the ability of the firm of developing both internal coordination competences and external informal networks.

However, it was not possible to find evidence that the CEO characteristics used, and social capital, organizational culture and silo effect have influence in the firm ability to develop cooperation networks with external stakeholders, at least not in the sectors studied.

KEYWORDS: CEO, Big Five Framework, Competing Values Framework, Networks, Tourism

RESUMO

Investigação sobre como as características e o capital social dos CEOs podem influenciar a organização e a sua capacidade de estabelecer redes (internas e externas) permanecem ainda por explorar. Por esse motivo, este trabalho de investigação pretende compreender a forma como os traços de personalidade dos CEOs, utilizando a Big Five Framework, as variáveis observáveis (idade, educação formal, diversidade em termos de experiência em gestão e a experiência como CEO) e o capital social, influenciam a organização usando a cultura e o efeito silo e, conseqüentemente, a capacidade da empresa em estabelecer e desenvolver redes de cooperação.

O efeito das características dos CEOs na organização foi estudado levando em consideração a possível influência da equipa de gestão da empresa (TMT), uma vez que as suas características podem limitar ou melhorar o papel de gestão do CEO. O efeito da indústria foi também considerado, dado que investigação anterior revelou que uma empresa num setor com crescimento sustentado tende a oferecer uma maior descrição da gestão, tanto para os CEOs como para a TMT (Hutzschenreuter & Kleindienst, 2013). Além disso, estudou-se o efeito do tamanho da empresa, uma vez que empresas menores tendem a ser mais flexíveis e permitem que os CEOs tenham um maior poder de decisão, já que empresas maiores geralmente apresentam estruturas formais, centralizadas e hierárquicas inibindo o papel do CEO.

Utilizando os dados recolhidos, através de um inquérito a 185 pequenas e médias empresas dos setores de Alojamento e da Alimentação, Bebidas e Tabaco, o primeiro com um crescimento rápido e o segundo com um crescimento lento, foi testado e encontrou-se de um modo geral sustentação para um modelo teórico em que os traços de personalidade do CEO, como a conscienciosidade, a abertura a novas experiências, e a extroversão, e o capital social influenciam a cultura organizacional, e o efeito silo das empresas. Sendo que estas variáveis organizacionais influenciam a capacidade da empresa desenvolver tanto as competências de coordenação interna, como as redes externas informais.

No entanto, não foi possível encontrar evidências de que as características do CEO e o seu capital social, bem como a cultura organizacional e o efeito silo têm influência na

capacidade da empresa de desenvolver redes formais com stakeholders externos, pelo menos, não nos setores estudados.

PALAVRAS CHAVE: CEO, Big Five Framework, Competing Values Framework, Redes, Turismo.

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INTRODUCTION

1 INTRODUCTION

Nowadays, organizations are more and more seen as a web of relationships either social or business, as an individual's social network allows the firm to have access to different types of resources, and thus be better prepared to face a demanding business environment (Lee *et al.*, 2017). The use of interorganizational networks has increased in the last years, being the most preferred "mechanism" to make business to happen (Mischen, 2015).

As a result, there is a change in the focus of organizational theory, including not only the internal processes of organizations, but also in the organization–environment interface (Häkansson & Snehota, 2006). Firms are more and more aware that are members of a network, in which they not only act and react, but above all they interact (Ford *et al.*, 2002).

The business world is now seen as a web of relationships (Johanson *et al.*, 2009), and if firms want to achieve their goals, they need to establish and develop collaboration relationships with other organizations (Alexander, 2014). Nowadays, firms depend on the strategy, actions and performance of other firms, and on the collaboration relationships they have with their stakeholders (Wilkinson & Young, 2002).

Therefore, the options and actions of each firm depend on other firms' options and actions, which reflect their managers. Executive actions substantially shape the fate of enterprises, in fact, executive attributes shape not only the organizational performance but also business, corporate, and international strategic profiles (Carpenter *et al.*, 2004). The Upper Echelons Theory (Hambrick & Mason, 1984) had already mentioned the influence of Top Management Teams (TMT) in the outcomes of an organization. Zacharias *et al.* (2015) found that there is significant CEO influence on firms' strategic actions. This influence is even more significant in small and medium enterprises (SME's), where the CEO is often the TMT.

Because CEOs attention allocation is influenced by the interaction with members of the firm, it is necessary to study how TMT influence the allocation of attention of their CEOs. Additionally, industry and firm are situational characteristics that also affect CEO attention allocation and managerial discretion (Hutzschenreuter & Kleindienst, 2013).

Managers should have the ability to drive their employees, and therefore the firm, into a successful collaborative process, if the aim is to improve the firm organizational performance (Bevc *et al.*, 2015).

Little research has been conducted on the study of psychological characteristics of top executives (Barsade *et al.*, 2000), as CEOs are often unwilling to spend time answering lengthy questionnaires to assess their personality traits (Hambrick, 2007). Araujo-Cabrera *et al.* (2017) also suggested that the relationships between CEO characteristics and firm performance should be furthered studied.

Therefore, the aim of this research is to find out how CEO personal characteristics can influence the organizational culture and the existence, or not of silos, and consequently how this can affect their ability to establish and develop collaboration networks, either internal or externally, without neglecting the possible effect of the top management team, of the industry and, of firm size may have on the CEO managerial discretion, and consequently on organizations, and consequently on their ability to establish and develop collaboration networks.

So, to assess the impact of CEOs psychological traits on the organization (culture and on silo effect) it was used the Big Five Framework to allow the researcher to see if there are traits more likely to influence organizational culture or the firm ability to create and develop internal and external networks than others. This firm ability to create and develop internal and external networks, can also be a result of the type of organizational culture itself beyond being a consequence of CEOs psychological characteristics.

Additionally, observable characteristics like age, formal education, managerial tenure, and functional background (Peterson *et al.*, 2003) seem to have a huge impact in organizational culture, and in their ability to establish relationships. Therefore, the relevance of considering their effect on how CEOs influence the organization, formally and informally.

Very often networks are used to process and transfer knowledge and, in that process, social capital assumes an important position (Inkpen & Tsang, 2016). Social capital also allows the adoption of new theories, and of innovation (Amoako-Gyampah *et al.*, 2018). This happens as social capital can be developed either within the organization, by promoting interpersonal relationships, or externally, by linking external resources and

favoring knowledge transfer. These social ties are good for both the individuals and the organizations (Lee *et al.*, 2017). An individual social capital may help to break down silos both internally, and outside the organization transforming the act of management into a collaborative process (Bevc *et al.*, 2015), leading to the creation of informal external networks directly or indirectly, by using organizational culture as a mean to have good communications and relationships among employees and with their stakeholders.

Sometimes this collaboration happens internally, reducing the odds of the appearance of silos, other times, it occurs with firms whose products or services when offered together with their products, help to add value to the consumers (Brandenburger & Nalebuff, 2011).

There is also collaboration with competitors, and their occurrence has increased a lot due to globalization (Pinasti & Adawiyah, 2016). Sometimes firms compete in some markets, while in others they cooperate in some attributes of their relationships (Ford & Håkansson, 2013).

Nowadays, innovation is crucial, so there are more and more firms seeking for it beyond their limits, but within a University-Industry Collaboration, gaining access to knowledge and technology, reinforcing thus their competitive advantage and improving their organizational performance (Hansen *et al.*, 2017).

For all this, in the literature review, due to its growing importance, it is reviewed the available literature on networks with complementors, competitors, customers-providers and with research centers or universities; then the literature review focus on the organization, by reviewing the main approaches concerning its culture and silo effect; and, at last it will be reviewed the literature on the CEOs, their psychological and observable characteristics, their social capital, and the top management team so as to be able to extract some propositions of research.

After revising the main theories related to the constructs, there is the conceptual model, and with it, the hypothesis of research, which will be tested after collecting the data, and so results will be presented after describing the methodology of research.

Despite all the studies referred above, there appears to be a substantial lack of research in exploring the role of CEO characteristics in influencing the organizational culture, in

creating or avoiding a silo effect, and how this may help or prevent the development and the establishment of (informal and formal) networks.

Therefore, the goal of this research is to find answers for questions like Which type of organizational culture is more favorable to the creation of networks? Which CEO personal trait is more likely to have influence in the culture of the organization? How much influence does the TMT, or the size of the firm, or the industry have in the CEO ability to impact both organizational culture and (internal and external) collaboration networks?

LITERATURE REVIEW

2 LITERATURE REVIEW

Nowadays, networks of any kind play a significant role in the world, most of the times due to Information Technologies, which enables the development of both social and business networks (Mischen, 2015). Networks are more and more frequent, as most of the products tend to work better if complemented with accessories, for example PCs perform better with chargers, cases and software (Altman, 2017). On the other hand, due to global competition, firms tend to compete with others in one region and to cooperate in another, developing a co-opetition relationship, or compete in some attributes and cooperate in other aspects (Ford & Håkansson, 2013). Also, it is more and more frequent to find cooperation relationships between universities and industry, since industry have started to look for innovation and knowledge outside their limits, and universities are an important source of scientific knowledge, offering industry the opportunity to enhance their innovation capacity (Dess & Shaw, 2001).

Furthermore, an organization is more and more seen as a web of relationships either social or business. Individuals' social network allows the firm to access various types of resources and be better prepared to face a demanding business environment (Lee *et al.*, 2017). Further research shows that the accumulation of social capital within the organization may lead to some improvements in culture, and therefore may help the adoption of new theories and technology due to stronger ties among firm members (Amoako-Gyampah *et al.*, 2018).

Simultaneously, firms seem unable to develop relationships internally, as departments tend to compete for the same resources and there are behavior obstacles that inhibit communication and knowledge transfer (Cromity & Stricker, 2011).

Once the aim of this research is to understand the role and importance of CEO (Chief Executive Officer) characteristics in developing a social structure and an organizational culture favorable to the establishment of inter and intra collaboration networks, it will be made a review of the main contributions and approaches concerning collaboration networks, organizational culture and silo effect, and CEO characteristics, both observable and psychological.

More recent research revealed that CEO characteristics (age, formal education, functional background and managerial tenure) are related to firm strategic actions and therefore to future firm performance (Wang *et al.*, 2016b).

The concept of TMT (Top Management Team) will also be reviewed, once CEOs are members of top management teams, with their characteristics and social capital may help CEOs to develop a culture capable of promoting teamwork, instead of creating silos, with the firm stakeholders.

The top management team should, in their work, be an element of managerial discretion. This is, the CEO is likely to have a minor or a greater effect depending on the existence, or not, of a TMT. Already, Halebian and Finkelstein (1993, p. 845) revealed some concern regarding the extent to which “CEO dominate the distribution of power within its top management team” and the impact in firm performance.

Industry and firm size are other variables to be reviewed since industry is one of the biggest responsible for changes in firms’ strategic decisions (Zacharias *et al.*, 2015) and the more dynamic it is, greater the level of uncertainty CEOs and TMTs have to deal with (Hutzschenreuter & Kleindienst, 2013). And, the larger the firm the more likely it is to be innovative and more prone to engage in collaboration networks (Yu & Lee, 2017), and more difficult it is for CEOs to have influence in the decision-making process, due to hierarchical structures and more decentralized decision making (Papadakis, 2006).

2.1 NETWORKS

Organizations are no islands (Håkansson & Snehota, 1989), they need to go beyond their boundaries, if they want to achieve their goals, this means they need to relate to other organizations (Alexander, 2014). The business context is now seen as a web of relationships, a network, replacing the old view of independent suppliers and customers (Johanson & Vahlne, 2009). The use of interorganizational networks has increased in the last years, it has become the most preferred “mechanism” to make the public and private sector work (Mischen, 2015)

This is one reason to review the concept of network, which is either applied to social or to business relations. If this new organizational design emerges to cope with the new competitive environment, then it is important to try to understand what the impact of networks in an organization is.

According to Roberts (2011, p. 679) a network can be defined “by three or more nodes that are linked in a social relationship. A node can be a person, group, organization, or even a nation-state”. Bearing this in mind, it will be possible to find networks of people, networks of groups, networks of organizations, with either interorganizational and/or intra-organizational relationships, and networks of business.

A network can be defined as an organizational form featured by repetitive exchanges among semi-autonomous organizations that rely on trust and embedded social relationships to protect transactions and reduce their costs (Borgatti & Foster, 2003). Or, in a simpler way, a network is a set of companies and the relationships among them, being the boundaries of a firm network difficult to define, because if it is considered only the group of companies with which the firm cooperates then the view of the organization context becomes very limited (Ford *et al.*, 2003).

The relationships between firms tend to be complex and of long-term, influencing what happens within organizations, and being a result of previous interaction between departments (Häkansson & Ford, 2002).

The management of a network is a result of the interactions that occur among the actors in the network, so no actor alone controls the network. For this reason, collaboration is required for firms to compromise their own aims and agendas, to achieve firm performance goals (Batt & Purchase, 2004).

Firms do not depend only on their individual efforts to survive, they also depend to a large extent on the activities and performance of other firms, and on the relationships they maintain with their partners (Wilkinson & Young, 2002). In fact, “a firm is embedded in a network of ongoing business and nonbusiness relationships” (Ritter *et al.*, 2004, p. 175) which may work as enablers or inhibitors of firm performance, therefore firms should be looked as part of “business systems”. In fact, networks should be used “to bridge organizational information gaps and asymmetries” (Agranoff, 2007).

The management of a network constitutes an important element of strategic behavior and the networking paradigm a way of understanding the totality of relationships. Networks may help a firm to enhance their competitive advantage once a network provides external access to tangible and intangible resources of other network members (Davies *et al.*, 1995). A network usually enables the firm to have access to information, resources, technologies, markets, and knowledge, being their relationship building ability a source of a sustainable competitive advantage (Batt & Purchase, 2004). For that reason, a network must have the ability to negotiate their relationships, that is to have social capital, must be able to acquire both tacit and explicit knowledge, and to have financial and human resources to exchange (Mischen, 2015).

When communicating with their relationships, a firm may have access to resources, knowledge and markets, and also benefit from the functions they perform. A firm relationship may give access to other organizations, resources, knowledge and competencies (Häkansson & Snehota, 1995).

The arrival of this concept forced managers, especially the ones in position to redesign their organizations, to change the way they viewed the future directions of their firms, and also the approaches they used to manage the existing structures (Miles & Snow, 1986). Therefore, CEOs' ability to manage the organization and create and reinforce networks, by using their structure of social relations and the organizational culture, is most relevant to the success of business. Since the relationships established among the different members of the network allow firms to have access to the other members' partners, and these communication links are of extreme relevance for the success of the organization.

In performing their business activities, firms establish collaborative relationships with different types of organizations and firms, since they influence direct or indirectly their performance (Ritter *et al.*, 2004). The main objective for having collaboration is to benefit from the core competencies of the firms involved in the network, and share information, resources and knowledge with the network members, enhancing their competitive advantage. This is even more real due to the advances of technology (Choudhary *et al.*, 2013), and because collaboration is nowadays a requirement, and not an option if firms want to remain competitive in the global market (Mircea *et al.*, 2016).

Collaboration among organizations involves sharing information regarding market conditions and new technologies, and or sharing facilities as distribution channels and complementary assets or on setting market standards. When firms collaborate, there are reduction of their costs with R&D. By collaborating, firms change their competitive position and also influence the structure of the market and their performance (Goyal & Moraga-González, 2001).

It is not easy to establish a cooperation network, as not always firms are willing to cooperate with others, in a network. Their decisions usually depend on the technology, the experience, tasks and on the strategic orientations of the other firms (Wilkinson & Young, 2002). Therefore, the legitimacy of an organization may be important, as may help to foster collaboration between organizations.

For Brandenburger and Nalebuff (1995), there are essentially four types of potential collaboration relationships that may have an impact on firm performance: suppliers, customers, competitors and complementors. To those, were added by Ritter *et al.* (2004) the intrafirm relations, both within focal firm and other firms, and the relationships with governmental agencies, universities and research and development institutions.

2.1.1 Complementors

Altman (2017) found that there are products that work better when having accessories, like smartphones with cases, or applications. In this case, these accessories – complementary products - increase the value of the core product – smartphone. Most of these firms work with each other based on information, technology and values-based dependence.

Complementors are firms' providers of complementary products and services. A company has a complementor firm when customers consider the product to be more valuable when they also have the other firm's product, rather than when customers experience the firm's product alone. On the supplier side, a company has a complementor firm when the supplier is more attracted to provide resources to the first firm but when supplying the other firm as well, than when supplying only to the first alone, so the

complementor firm may give a contribution to a business success (Brandenburger & Nalebuff, 2011).

A more direct definition is given by Ritter *et al.* (2004) for whom a complementor firm develops relationships with different types of firms whose products or services increase the value of their own outputs. In the case of complementors' relationships, complements are always reciprocal, as shown by Brandenburger and Nalebuff (2011) example, new cars complement auto insurance, so the more, new cars are sold, the more auto insurance consumers will buy. Therefore, auto insurance companies might use their knowledge to help their customers have better buying conditions when buying new cars. On the other hand, suppliers of the car industry, such as tire manufacturers have not neglected the complements either, by motivating car drivers to keep driving along the roads. This is what Michelin, the tire manufacturer does, by publishing the tourist guidebooks.

The existence of complementary products increases the value offered to the customer, and consequently the size of the market increases. Thus, it is frequent to find complementor firms with their interests aligned. It is also true that most of them would like to offer their products or services with a higher price than the complementors', so very often they might disagree over matters of pricing, technology, standards or degree of market control. The key to solve eventual disagreements abides on the management of the relationship with complementors, by deep understanding their capabilities, strategies, goals and their incentives to cooperation, without neglecting any potential areas of conflict, and thus benefit from the opportunities that a cooperation relationship may offer (Yoffie & Kwak, 2006).

Complementors' interaction may happen intentionally or unintentionally, but by understanding the nature and function of the product or service offered and the complementors' contribution to the overall value enable firms to identify their complementors and to anticipate the nature and the intensity of their potential responses. It is also fundamental to have a deep understanding of the complementors' capabilities to determine the influence of cooperation, or of competition or of coopetition (Noonan & Wallace, 2003).

Therefore, one industry needs a complementary industry, so that both can progress and succeed in business (Brandenburger & Nalebuff, 2011). Furthermore, complementors

may be regarded as development partners “whose outputs or functions increase the value” of a firm innovation (Munksgaard & Freytag, 2011, p. 286). So, complementors may also be innovation partners as new products can be introduced in the market as a result of their joint efforts, either be marketing, production or product development efforts (Ritter *et al.*, 2004).

It is possible to maximize complementors’ firm performance if their managers have in-depth knowledge of the others’ capabilities if they understand the value of the others “strategic assets” and know how to benefit from the existing network. In short, if CEOs “actively monitor and manage the nature of exchange relationships with firms in their networks” (Eisingerich & Bell, 2008, p. 501), then it is more likely that they maximize business performance.

2.1.2 Coopetition

Cooperation may exist among apparent rivals, and sometimes there are cooperation and competition activities between business companies, or sometimes actors compete in some attributes of their interactions and cooperate in other aspects with the other members (Ford & Häkansson, 2013). Two competitors can both compete and cooperate with each other, simultaneously; this shows the meaning of the term “coopetition”. As two companies can both benefit from cooperation and competition at the same time, so both types of relationships deserve to be analyzed simultaneously (Bengtsson & Kock, 2000). Thus, coopetition or co-opetition describes the simultaneous relationship of cooperation and competition that firms may maintain with the aim of maximizing their profits (Xu *et al.*, 2017). This phenomenon has seen its importance increasing due to a greater global competition (Pinasti & Adawiyah, 2016).

In this case, it is important to define the concept of competition, for instance Nalebuff and Brandenburger (1995) also use the concept of coopetition but consider a very broad definition of competition in their analysis. From their point of view, a bank and a car

manufacturer can establish a cooperative relationship, as the bank grants the loan and the second sells the car¹.

For Bengtsson and Kock (2000) competitors are the ones that produce and market the same products, which makes the relationship more complex, as the firm is involved in both competitive and cooperative interactions with the same actor, in the same market. These two forms of interaction are designated as activities as it is difficult to compete and cooperate with the same activity, however due to some internal disagreement it can happen to be difficult to separate the activities. It is this perspective that will be followed during this research.

Firms compete with each other in order to create competitive advantages and deliver value to the customer. This competition shapes the network of relationships between companies and most of the times inefficient firms are driven out of the market (Wilkinson & Young, 2002).

The concept of competition appears connected to the market, and two requisites must be met for competition to exist: there must be more than one actor, so that the consumer or the supplier can choose. The more actors present in the market, the larger the competition will be; the actors present in the market must be similar to another in one or more attributes. Competition has to be in terms of one or more of those attributes (Ford & Häkansson, 2013). Simultaneously, cooperation among rivals can be advantageous in organizations where resources and capabilities can be combined and used to compete with others (Bengtsson & Kock, 2000).

The two activities: cooperation and competition can be developed separately depending on the proximity to the customer and on the competitor's access to some resources. Individuals within the organization behave according to one of the two logics of interaction at a time, or the two logics, are divided between the individuals of the firm. A company may cooperate with one competitor and compete with another, and thus taking part in different relationships with different members. These relationships are rather complex, as members are involved in a hostile relationship, competition, on one hand, and on the other, in a friendly relationship with the member with whom they share the

¹ In this work, this relationship is designated as complementing, and the firms as complementors.

same interests. These two logics must be properly managed so that a coopetitive relationship emerges (Bengtsson & Kock, 2000).

The degree of cooperation and the degree of competition may vary. Two competitors can have a mere relationship of cooperation, assuming a traditional cooperative relationship. In addition, two competitors can have a mere competitive relationship, revealing a relationship of competition. Besides these two, there are three different types of coopetitive relationships depending on the degree of cooperation and competition, as shown in figure 1.

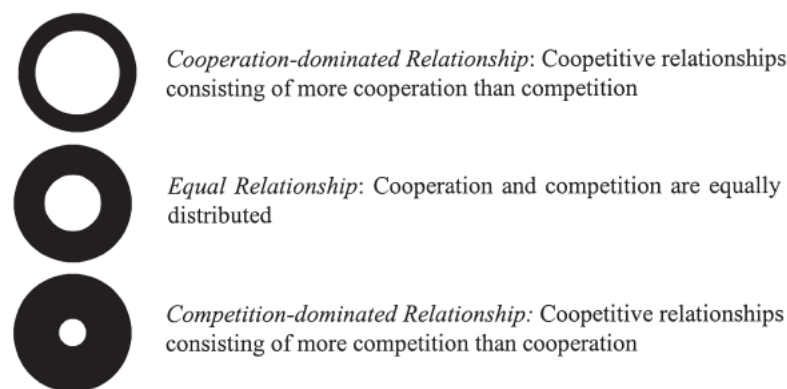


Figure 1 - Different Types of Coopetitive Relationships

Source: Bengtsson, M. & Kock, S. (2000, p.416).

One side of a coopetitive relationship assumes that individuals behave according to their own interests, pursuing their own aims, not taking part into collective activities, ambitioning that their products differentiate and perform better than their competitor, so the existence of different self-interests will lead to conflicts with each other. The other side of the coopetitive relationship assumes that individuals behave in a way to achieve common goals, seek to profit from their partner's competences, seek to reduce lead times and reduce costs of new product development. Nevertheless, the reason why individuals pursue a win-win relationship abides in the social structure and not in the individuals' motives and interests. In this relationship, what really matters is the well-being of the competitors and of the relationship, and not one's profit or opportunism. Thus, in certain cases, it is the industry structure that forces firms to compete with each other, and it is the social structure that explain why they cooperate with each other (Bengtsson & Kock, 2000).

Coopetition has been more frequent due to the increase of interdependence between global actors and the need for collective action, risk and knowledge sharing and strategic flexibility. Some firms are more proactive than others in adopting coopetition, depending on their organizational culture, global experience, strategic orientation and on competitors' attributes, like their resource complementarity, goal divergence or market commonality (Luo, 2007).

Coopetition usually emerges in the market as a reaction to technological innovations, entrance into a new market or to a deep change in regulations (Brown *et al.*, 2017).

It is precisely to benefit from sharing costs, risks and/or knowledge in research and development that competitors join forces in this kind of collaboration, competing when they try to perform better than the other, and try to differentiate their products and services in the market (Alves & Meneses, 2015).

Also, the existence of previous personal relations among the individuals can help the establishment of coopetition relationships once an individual social capital is recognized to facilitate the flow of knowledge (Schmiele & Sofka, 2007). The success of the cooperation relationship relies on the quality of the existent relationship between the involved actors, in particular because some rules for the cooperative and competitive interactions are tacit as they are based on their previous experiences (Dahl, 2014).

Das and He (2006) show that partner selection is mainly based on either task-related or on partner-related criteria, however “the inter-personal relationships between entrepreneurs or decision-makers” should also be considered in coopetition relationships (Alves & Meneses, 2015, p. 26). A reliable and trustworthy CEO aware of the advantages that personal social capital can bring into the organization will be better positioned to manage the firm in a situation of coopetition.

2.1.3 University-Industry Collaboration

Cooperation between universities and industry has seen its importance growing in the literature since the nineties, of the twentieth century, first more focused on medical research, and nowadays more used in social sciences and in the management field

(Ankrah & Al-Tabbaa, 2015). Organizations are now looking for innovation outside their boundaries, and a University-Industry Collaboration (UIC) gives them the opportunity to access new knowledge and technology, to participate in research projects and consultancies, allowing firms to become more competitive and above all to improve their organizational performance (Hansen *et al.*, 2017).

This happens because universities and other higher education institutions are a relevant source of scientific knowledge. Therefore, industry can have access to this knowledge by developing formal and informal relationships with those entities, and thus encourage innovation and production. Those formal and informal relationships may be due to the founders' educational qualifications and to their links to those organizations (Westhead & Storey, 1995).

University-Industry Collaboration has been generally considered as an important mean of companies to enhance their innovation capacity, as the organization uses external networks to develop innovation and knowledge, to complement the traditional internal R&D department (Dess & Shaw, 2001). Some UIC work on a short-term basis with the aim of achieving immediate R&D results. However, there are cases, mainly SMEs, that when pursuing a long-term strategy tend to develop University-Industry relationships far beyond the immediate moment (Bjerregaard, 2009). This is because knowledge nowadays becomes obsolete very quickly, and their managers feel that if they want to remain competitive, they have to find alternative ways to keep their innovation capacity at the forefront (Hansen *et al.*, 2017).

Although factors as capacity and resources, legal issues, and contractual mechanisms, management and organization issues, issues relating to technology, political and social issues, and others facilitate or inhibit the collaboration between universities and industries (Bruneel *et al.*, 2010), managerial and organizational issues are the critical factors that facilitate or prevent the University-Industry relationship (Ankrah & Al-Tabbaa, 2015).

Successful UICs allow universities to enhance their financial resources that can be used in more research, to identify new fields of research and commercial applications of any academic research. Industry, on the other hand, profits from successful UIC, by reaching

brand new knowledge, technology and possible solutions to any industrial problem (Lee, 2018).

Perkman (2013) found that UICs are often a consequence of academic spin-offs or licensing agreements due to research commercialization. Other collaborative activities between industry and universities, also designated by 'academic engagement', are joint research projects, the so-called collaborative research, contract research, consulting and informal contacts, which allow knowledge and technology transfer among them. This academic engagement may be an important source of income to universities because of knowledge and technology commercialization, licensing of patents and spin-out activities (Perkmann *et al.*, 2013).

There is still another mode of collaboration between industry and universities, named educational collaboration, defined by the extant relationships between academia and other non-academic organizations, established or developed through study projects, jointly organized courses, tailored degree courses and thesis projects, without neglecting that education and knowledge creation are the main reasons why universities exist (Leena, 2017). These educational practices exist to potentiate a foster knowledge creation, innovation development and a more fluid learning relationship between universities and industry, enabling firms to access new skills and competences.

Universities and industries are motivated to establish collaborative relationships due to necessity, reciprocity, efficiency, stability, legitimacy and asymmetry. This last one was found only in the side of the industry, once industry enjoys having the power to control its resources (Ankrah & Al-Tabbaa, 2015).

However, managing a collaborative university-industry relationship is not always easy, as it may go against firm strategy (Goel *et al.*, 2017). But, undoubtedly UICs make shared knowledge creation, joint innovation and learning easier for both parties (Weckowska, 2015).

2.1.4 Customers and Providers

Every firm to survive needs to have customers and suppliers and be aware of the importance of that fact; lately many firms have been developing more co-operative relationships with them. Cooperation is just a characteristic of relationships among firms that feel they are important to each other (Håkansson & Snehota, 1989).

Although Groves and Valsamakis (1998) proposed three models for supplier-customer, they found strong evidence in this research that variability in firm performance tended to be lower in firms working in a partnership basis. Additionally, to partnership, the adversarial and the semi-adversarial models were proposed.

When the Adversarial model is adopted usually it is a short-term relationship, based on the lowest price and the minimum quality standards. Frequently, it is a multiple supplier relationship, characterized by the absence of the partnership practices.

The semi-adversarial model showed a power/dependence relationship among supply chain members, and it is the more powerful that usually imposes the terms of the relationship to the other members. As a result, the exchange of information is very limited, once information is a source of power/dependence in this relationship.

In a partnership model, there is a long-term relationship being characterized by great involvement of the parties in the design of new products, logistics processes, joint planning investments, just-in-time delivery practices, data exchange about sales, forecasts, stocks, production and delivery schedules, training programs, regular meetings at senior management level and assessment of suppliers' and customers' performance.

However, until achieving this point, suppliers and customers have to go through some stages. First, the critical factors for the relationship to work are trust and cooperation, then there is commitment, and then when the relationship is established there is dependence and information exchanging. When there is close cooperation and the customer shares with the supplier the advantages achieved, then it is expected that the supplier perceives the supplier-customer relationship as being beneficial. This also happens because very often suppliers engage in new supply chain relationships, by having access to markets and resources through a supplier-customer relationship, to stay competitive in the market. From the customer point of view, the reason to look for additional customers abides in the need to spread investment costs (Bradley *et al.*, 2006). However, the closer the

involvement with suppliers, the more beneficial the customer-supplier relationship would be. The more those benefits are perceived, the greater the longevity of the relationship becomes (Araujo *et al.*, 1999).

So, web of firms, constituting supplier networks or R&D networks, have replaced traditional customer-supplier relationships. More and more manufacturing firms are outsourcing their business activities except those considered as providing their core competencies. This externalization is also dependent on how strong the relationship with the supplier in the activities considered as being strategic to the firm can be (Möller & Halinen, 1999). However, it is required to identify which suppliers need more intensive interaction and those whose relationships should be managed. Roseira *et al.* (2010, p. 934) found that the basis of “both the creation and management of direct relationships between suppliers, and of the management of cross-over effects of individual buyer-supplier relationship” are the buyer-supplier dyads. Dyads between the focal buyer and its suppliers are the relationships which deserve greater attention since they are responsible for developing the most valuable resources, while the supplier-supplier relationships should be only managed since they are seen as delivering low-value activities (Roseira *et al.*, 2010).

Global competition, regulative barriers knocked down, shorter and more flexible delivery times, competitive prices have forced firms to specialize in the areas where they have core competences and to create supplier networks. Efficient logistics, customer database management, internet and technology have given a hand to these customer-supplier partnerships (Ford *et al.*, 2002; Möller & Halinen, 1999).

2.2 THE ORGANIZATION

Organizations are connected by networks of personal relations (Granovetter, 1985), so firms with top executives with a given set of characteristics and greater social capital will be preferred by partners to establish business relationships, and therefore networks.

An organization is more and more seen as a web of both social and business relationships since the individuals' social network allows the firm to have access to different types of

resources and therefore be better prepared to face a demanding business environment (Lee *et al.*, 2017). Firms are more and more aware that are members of a network, in which they interact (Ford *et al.*, 2002), and establish and develop collaboration networks to achieve their goals (Alexander, 2014).

Organizations are open systems once they depend on the continuous exchanges with the environment (Katz & Kahn, 1966), and they must adapt to the environment if they want to survive and prosper (Hambrick, 1982). According to Scott (2013, p. 57), organizations are “multifaceted, durable social structures, made of symbolic elements, social activities, and material resources”, although they are relatively resistant to change, with the aim of providing some stability, they change over time. This happens as organizations depend on the action, strategy and performance of other firms and on the relationships (formal and informally) they develop with their stakeholders (Wilkinson & Young, 2002).

2.2.1 Internal Network Cooperation

As collaboration between organizations enhances synergies among them, collaboration within organizations is critical, and non-collaboration leads to potential losses. The silo effect is an expression used to describe “a lack of communication and common goals between departments in an organization” (Hotaran, 2009, p. 216). The expression comes from the farm storage silo, possibly because silos are tall narrow buildings with no windows, preventing them to communicate among them and with the environment. The term “silos” is used when organizational departments are isolated, with very little communication among them, and they are often identified when a need for knowledge transfer remains to be fulfilled (Cromity & Stricker, 2011). In a silo, employees tend to work autonomously overlooking the organizational objectives, and are often reluctant to integrate multi-functional teams (Vatanpour *et al.*, 2013).

Additionally, the silo mentality is a cultural or social phenomenon which can be detected among individuals, groups, teams, business units or functional units in an organization (Fenwick *et al.*, 2009). If a silo mentality is found within an organization, it means that there are “individual or group mindsets which can be divisive within and between

organizations” (Vatanpour *et al.*, 2013, p. 209), which are identified as communication barriers leading to “disconnected” working flows.

In an organization, there is silo mentality when individuals are focused only in working in their best interest, with the purpose of achieving their best performance regardless the impact their behavior may have on others (Hotaran, 2009). Silos only exist in the mind of employees, they are not physically present in the organizations, but they create barriers influencing work behavior (Cilliers & Greyvenstein, 2012). In organizational terms, the existence of silos has an impact on the firm, in the way it performs, in the employees and, of course, in the customers (Fenwick *et al.*, 2009). In fact, by neglecting the connections to the stakeholders (employees included), the organization may be missing business opportunities related to innovation, creativity or efficiency and incur in additional costs (Fenwick *et al.*, 2009).

Silos exist in organizations, whether they are functional (marketing, finance, sales, ...), product geographical or country silos, and can be a result of an organization structure divided into different organizational units containing their team, and so it lacks motivation to work, or communicate with other divisions (Aaker, 2008).

Silos may create an environment in which personal and group interests may prevail over organizational goals and well-being. Or, silos emerge whenever a manager or a department see its own objectives as more relevant than the others (Stone, 2004).

A silo effect can be found in an organization when there are communication problems and fragmented behaviors, when it lacks co-operation among functional units and external relationships with other organizations, or stakeholders are neglected (Vatanpour *et al.*, 2013). Stone (2004) pointed out some reasons that might explain why silos may emerge within organizations:

- Rigid organizational structure will discourage any interaction among functional departments;
- A competitive organizational culture will inhibit the development of any team spirit within the firm;
- Procedures and policies defined in a way that allow different interpretations will cause conflicts;

- The leader personality or management style might avoid or encourage the existence of problems among functions.

Vatanpour *et al.* (2013) on the other hand, found with their research, in the pharmaceutical industry, some more causes for the emergence of silos, namely:

- Different departments usually have different objectives and priorities which promotes the development of the sense of the group, and not of the organization;
- Functional budget constrains often promote employee rivalry, as financial resources may be used to reward one, and not the other;
- Existence of subcultures make it difficult for others to integrate;
- Fast growing firms tend to invest in their growth instead of communicating properly their vision, mission, strategies and values;
- Lack of trust inhibits the employees' ability to collaborate;
- Knowledge possession is seen as power, so when one possesses information tends to keep it, instead of sharing it;
- Barriers to communication encourage departments to work on their own, making it more difficult for the integration among the different areas of expertise.

For Sy and Côté (2004) a silo mentality can emerge for two reasons. First, because most employees have the same job, sometimes in the same department, throughout their working life they tend to work always with the same people, and in the same way. Second, because traditional structures do not require a high degree of collaboration, as they favor specialization.

When the problem concerns the information flow, then the organization has an Information Silo, once there are obstacles in the mind of the employees to information transfer. If this happens among employees, at the same hierarchical level, it is a Horizontal Silo. In case it occurs between managers and employees, it is a Vertical Silo (Vatanpour *et al.*, 2013).

There are mainly three types of barriers to communication: technical, behavioral and multi-generational. The first ones are related to barriers to access, platform, security management and/or training. The behavioral barriers are more concerned with motives, age, attitudes, environment, and culture that may inhibit knowledge transfer. And, the

multi-generational barriers are related to values and work habits of a multi-generational workforce, like the Baby boomers or Millennials (Cromity & Stricker, 2011).

In order to overcome their internal silo mentality, companies engaged in four activities: coordination, cooperation, capability development and connection (Gulati, 2007). By coordination, Gulati (2007) meant the definition of “structural mechanisms and processes” and harmonization of information and activities, so that employees could improve their focus. Cooperation exists to motivate people to work together pursuing the same goals. In terms of capability development, the organization should ensure that it has enough people with skills to deliver solutions. At last, connection involves the development of relationships with external stakeholders, and this conducts most probably to the establishment of collaborative networks.

In case the silo effect is controlled, reduced or even avoided, innovation might emerge, productivity might increase, and this happens because collaboration among organization members’ also increases, and so does the firm competitive potential (Vatanpour *et al.*, 2013).

It is important to highlight that silo mentality is created by the individuals who work in the organization, so it is also the “chemistry” between people that creates the bridge between departments (Schütz & Bloch, 2006). Therefore, if the CEO communicates consistent and coordinated goals, if the CEO ensures that there is a flow of information through management and among functional areas, that there is a clear responsibility definition and work processes and promotes inter-departmental meetings, the organization may be well prepared to avoid the silo effect (Schütz & Bloch, 2006).

A survey on internal collaboration conducted by the American Management Association (AMA) revealed that when asked about the reasons for silos the respondents referred “office politics”, the existence of prevailing individual over corporate objectives, lack of cooperation among cross-functional teams, poor project management leadership, geographical distance among business units, financial rewards based on individual performance, lack of commitment to organizational goals, and procedures inhibiting collaboration were reasons identified by the respondents for the existence of silos. However, the most referred cause was the manager attitude, then the indifference to other

departments' needs, followed by a collaboration discouraging organizational culture (Stone, 2004).

2.2.2 Organizational Culture

There are many definitions of organizational culture, and many kinds of organizational cultures, nearly every firm has its own culture (Melé, 2003). Schein (1984, p. 3) introduced a formal definition of organizational culture: "Organizational culture is the pattern of basic assumptions that a given group has invented, discovered, or developed in learning to cope with its problems of external adaptation and internal integration, and that have worked well enough to be considered valid, and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems". It usually refers to the values and beliefs that provide norms about expected behavioral patterns that employees might follow (Schein, 1992). Those shared values work most of the times as guidelines to members' behavior. Schein (1984) presents culture as a set of assumptions one makes about a group they belong to, and those assumptions can be grouped into three levels: artifacts, espoused beliefs and values, and basic underlying assumptions differentiating the levels at which organizational culture manifests.

Organizational norms derive from values and manifest in artifacts, which represent the most visible layer of the organizational culture once they became evident in symbols, rituals, physical workspace evidence and type of language (Schein, 1992). These values and beliefs that are inherit by new members, and disseminated through the organization, are the ones which have proven to be effective over time and have their roots in the history of the organization (Giberson *et al.*, 2009).

In fact, according to Cameron and Quinn (2011) the most visible manifestation of culture is the way members of the organization behave and interact.

Following the same line of thought, Willcock (2014, p. 21) defined organizational culture as "the identity, characteristics, and behavior that result from the relationships between individuals in the context of the team and between teams in the context of the wider organization and environment".

Although organizational culture is a largely invisible social force, it is very powerful within organizations. For this reason, Hogan and Coote (2014, p. 1609) stated that “organizational culture is a powerful means to elicit desired organizational outcomes”. So, an organizational culture may work as an organizational control mechanism once it offers employees a framework through which they internalize their roles and behaviors (Deshpandé & Webster, 1989). In fact, the internalization of organizational values helps the management to match their goals, and with the objectives of employees (Buschgens *et al.*, 2013).

Recently, Groysberg *et al.* (2018) found that organizational culture influences both employee engagement and motivation, the closer they feel to culture elements, the more motivated and engaged the employees are. Organizational culture also influences the way employees relate to each other and, also how they look after new members, so it has been pointed out as an important barrier to the flow of new knowledge and innovations (Helfrich *et al.*, 2007). Besides being “physical constructions”, organizations are also social, so it is most important to study how organizational culture affects firms (Hogan & Coote, 2014).

So, as to assess if a given culture “is an effective and efficient coordination instrument” (Buschgens *et al.*, 2013, p. 763), Quinn and Rohrbaugh (1983) developed the Competing Values Framework (CVF) which was later refined by Cameron *et al.* (2009). This model is one of the most widely used in the area of organizational culture research. This framework was originally developed to assess organizational effectiveness; however, it quickly became an important tool to explore the organization value system, and the basic assumptions made about motives, leadership, decision making and organizational forms (Kalliath *et al.*, 1999).

The CVF exposed in Figure 2, after some refinements, considers that most organizations can be featured by two dimensions of competing values (Kalliath *et al.*, 1999). The first one, flexibility/decentralization-control/centralization reflecting the importance given to control, predictability and stability or to flexibility and adaptability within the organization. The second dimension shows the internal-external focus, revealing how concerned the organization is with what happens within its limits, or in its environment and relationships with stakeholders. If the organization is focused internally it means the

organization values the functions and the development of human resources within the organization. If it is externally focused, then the organization gives more attention to its development within a larger environment (Grabowski *et al.*, 2015). Each axis represents a dimension, by cross-classifying them, it results in four quadrants, each one associated to a culture type (see *Figure 2*). However, an organization can rarely be classified in one single quadrant; in fact, it will show values from different quadrants, with more emphasis on one or two quadrants (Buschgens *et al.*, 2013).

In any case, whatever the culture type an organization presents, the important part is to understand the impact of organizational culture in how organizations work (Schein, 1996). Besides leadership, organizational culture plays an important role in knowledge transfer, and this requires willingness of the individuals to work with others and share knowledge to their benefit, and also breaking down hierarchies within the organization (Goh, 2002).

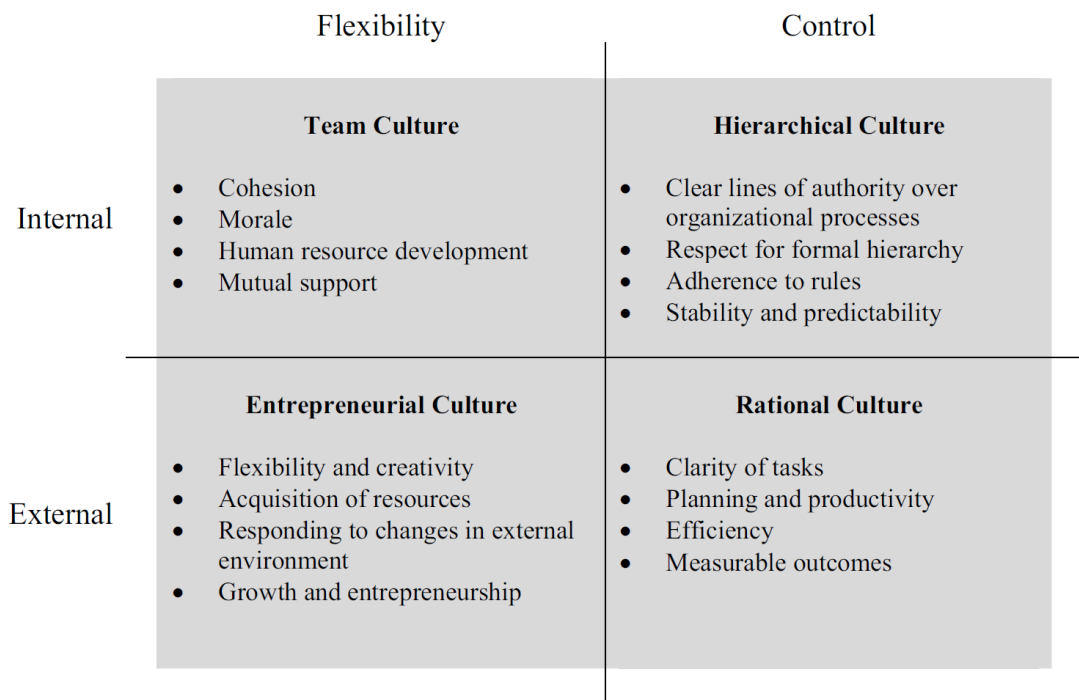


Figure 2 - The Competing Values Framework of Organizational Effectiveness.

Adapted from Kalliath, Bluedorn, & Strube (1999). "A confirmatory factor analysis of the competing values instrument." *Educational and Psychological Measurement*, 59 (1) in Helfrich, C.D. *et al.* (2007) "Assessing an organizational culture instrument based on the Competing Values Framework: Exploratory and confirmatory factor analyses."

Organizations with more values reflecting an internal focus and emphasis on flexibility, named “Team Cultures”, encourage decentralization, autonomy, mutual help, empowerment and teamwork (Helfrich *et al.*, 2007). Cameron (2009, p. 3) named these cultures after “Clan cultures”.

Often different subcultures can be found within an organizational culture, most of the times due to task functional division or departments, giving the idea that there is the “us” (the ones who belong to the same department) and the “others” (from the other departments). Despite the idea that nowadays organizations tend to follow the trend of interorganizational collaboration. However, it is still common to find organizations that prefer “to work with those most “like” them, perpetuating the “silo effect”” (Bevc *et al.*, 2015). As each department is very closed about itself, it will be difficult to perceive the company as a whole, and there may be greater difficulty in establishing networks with other organizations.

In the opposite side of the axis, there are organizations with values showing an internal focus and an emphasis on control, the ones reflecting “Hierarchical Cultures”, once they tend to show centralized authority, formal rules and procedures, good definition of the employees’ responsibilities, as stability is a goal (Cameron, 2009; Helfrich *et al.*, 2007). In this case, there seem to be certain values established top to bottom, cross-company-wide and shared by all departments, which leads to a greater understanding of what the other does and how it does it and can enhance the appearance of internal networks. However, as a rule, these very rigid organizations can discourage cooperation among employees. On the other hand, collaborating with other organizations always implies a certain loss of control, so it seems less likely that companies with a strong hierarchical culture will establish external cooperation networks.

Organizations where dominating values reveal an external focus and emphasis on flexibility, called “Entrepreneurial Cultures” are usually considered open systems, favorable to creativity and innovation and are risk takers (Kalliath *et al.*, 1999). For Cameron (2009, p. 3) these are “Adhocracy cultures”. Being more open systems, which is often reflected in open spaces within the company, where employees coexist, work and discuss their projects. The employees of these companies are often more concerned with the development of a multidisciplinary project, so it is not expected that there is any silo

mentality. On the other hand, more and more people talk about open innovation, this is in how firms can leverage their internal and external sources of ideas and bring them to market (Chesbrough, 2003), which would entail the establishment of cooperation networks.

Finally, organizations with an emphasis on control and external focus, labeled as “Rational Cultures” are known for pursuing efficiency and measurable outcomes (Kalliath *et al.*, 1999). These cultures are also referred to as “Market cultures” due to their emphasis on stability and competitive market position (Cameron, 2009, p. 3). These companies tend to understand the pros and cons of establishing relationships (internal and/or external) very well so it is expected that there is no real trend, but only studying it case-by-case.

2.3 THE CHIEF EXECUTIVE OFFICER

Organizational outcomes depend on values and cognitive bases of the most powerful actors in the organization (Hambrick & Mason, 1984). There is a connection between the performance of the organization and the top managers who manage it (Hambrick & Mason, 1984), the so-called Chief Executive Officers (CEOs). In fact, it is assumed that the characteristics of the CEO and of other top team members impact on strategic decision-making processes (Papadakis & Barwise, 2002).

The CEO is probably the most powerful member of the TMT (Crossland & Hambrick, 2007), so CEOs should not be considered just like any other member of the TMT (Hambrick, 1994).

Senior management of a firm can exercise influence within the organization through values (Mumford *et al.*, 2002). In fact, by emphasizing certain values and by creating norms for expected behaviors, managers can build an organizational culture with a powerful influence on employee behavior. Values and norms can in turn manifest itself in artifacts (e.g., organizational rituals, language and stories, and physical configurations) and lead to desired or accepted behaviors.

The CEO personality can influence all the decision process dynamic, and how it can be reflected in firm performance, namely in sales growth and returns on investment and assets (Peterson *et al.*, 2003). Ou *et al.* (2014, p. 61) revealed that CEOs can influence the attitudes and behaviors of employees at lower levels by forming “collective meanings across hierarchical levels”.

CEOs are in charge of the firm’s management, so CEO characteristics have a great influence on the firm (Finkelstein *et al.*, 1996). Therefore, CEOs enjoy a dominant position within TMT, so it is interesting to discover how they influence organizational strategies, culture, structures, outcomes and performance (Finkelstein, 1992). This same idea is also defended by Carpenter *et al.* (2004) who claimed that CEOs influence not only the organizational outcomes, but also the organizational structure, strategy and policy. In fact, Zacharias *et al.* (2015) when studying the importance of the CEO, firm, and industry effects on strategic actions, also found that it is important to consider the effects of the CEO, when studying the antecedents of the organization strategic actions’, although these also suffer some influence from the industry and from the firm. If a CEO experiments a wide career variety then it is highly probable that it will have an impact on the way CEO perceive, interpret and act, being reflected on more innovative actions (Crossland *et al.*, 2014), for example.

When the influence of the CEO characteristics is studied, a great part of the research focuses in the analysis of the impact of the observable variables, or in psychological dimensions. For example, a narcissistic CEO is seen as dominant, self-confident, with a sense of entitlement, grandiosity, and with low empathy (O'Reilly III *et al.*, 2014). Further research showed that narcissist individuals do not need the other team members to emerge as leaders, since their individual performance was considered, and when this happens, it was found that these team members had less decision-making and were less verbal, probably due to the narcissist dominance and grandiosity (Nevicka *et al.*, 2011).

It is noticeable that personality characteristics, influence the way CEOs process information about their capabilities, the firm and the environment (Finkelstein *et al.*, 2009). For this reason, psychological variables play an important role in how organizations work.

The CEO observable variables relate to the CEO background and provide much of the knowledge and values that shape firm strategy.

2.3.1 Psychological Characteristics

Although Hambrick and Mason (1984) defend the idea that organizational outcomes are reflections of managers' characteristics, values and cognitive bases. Hambrick (1984) focused the research only on some observable variables like age, education, financial position, functional background, group heterogeneity, socioeconomic roots and other career experiences, once he found that top executives tend to show some reluctance to participate in psychological tests. In fact, most empirical research considers the psychological phenomena as a 'black box'. Hambrick *et al.* (1993) examined the determinants of an executive's commitment to the status quo (CSQ), which reflects a psychological orientation and found that a firm's performance is positively related to executive's CSQ, being this relationship stronger in high discretion industries. For this reason, it is noticeable that Hambrick (1984) also recognizes the importance of the psychological characteristics.

However, lately some management researchers have focused their attention in assessing whether differences in personality traits can influence or not the performance of the organization, and to accomplish it, they have used the Big Five Framework (Abatecola *et al.*, 2013; Gow *et al.*, 2016; Kaplan & Sorensen, 2017; Nadkarni & Herrmann, 2010; Peterson *et al.*, 2003).

For instance, Peterson *et al.* (2003) used the Big Five Personality dimensions to investigate whether CEO personality features had any influence on the TMT group dynamics, and if these had any impact on firm performance. Nadkarni and Herrmann (2010) have used it to study if CEO personality trait enhances or inhibits strategic flexibility. Abatecola *et al.* (2013), have used the Big Five Framework to see if there were any associations between CEO emotional stability, extraversion and conscientiousness, and firm performance and strategic pro-activity. Gow *et al.* (2016) have used it to analyze whether differences in personality characteristics can be related to managers' investment

and financing decision-making and firm performance. Kaplan and Sorensen (2017) studied if CEOs were any different from other managers, using the Big Five Framework. The Big Five Personality Model is the most used personality assessment tool, because it is easy to apply, it is robust, simple and a comprehensive way of identifying individuals' personality differences (McCrae & Costa, 1987). However, the way each trait influences organizational culture and their ability to cooperate has not been subject of research.

Big Five Personality Dimensions

An organization is a result of the people's behaviors, as people define the way an organization looks, feels, and behaves. Therefore, the characteristics of people "are the fundamental determinants of organizational behavior" (Schneider, 1987, p. 437).

The Big Five Framework has been widely used as a research model of personality, mainly by psychologists; however, some management researchers have been using it. Over the past few years, some authors have studied the influence of the Big Five Personality dimensions on job performance (Barrick & Mount, 1991; Ceschi *et al.*, 2016; Judge & Zapata, 2015; Sartori *et al.*, 2016); others studied the implications of the Big Five Framework in human resources management like Barrick & Mount (1995), or Ariyabuddhiphongs & Marican (2015) who found that job satisfaction mediated the relationship of this framework with turnover intention among hotel employees.

More recently the Big Five Personality 'traits' framework has been used to study the influence of the five dimensions on an entrepreneurial personality, as Zhao and Seibert (2006), and Antoncic *et al.* (2015) did, or on the decisions to become and stay self-employed (Caliendo *et al.*, 2014). Other researchers, as Borghans (2008) used the Five Factor Model to show that some social and economic outcomes are a result of the individual personality traits.

The Big Five framework is a model of personality with five factors or 'traits', suggesting that most individual characteristics can be grouped into five personality dimensions: Extraversion, Emotional Stability, Agreeableness, Conscientiousness, and Openness to

Experience (Digman, 1989). The five ‘traits’ and their impact in human personality were proficiently explained by McCrae and Costa (1992) who defended the idea that most of the variables used to assess personality in academic research could be aggregated in one or more of the factors of the Big Five Framework.

So, by using this framework it will be possible to assess the degree to which the CEO may be described in each of the factors of the Big Five Dimensions (Gow *et al.*, 2016). For instance, an organization with a CEO with a high score in the Openness to Experience factor, will probably present an organizational culture with characteristics closer to “Entrepreneurial Culture”, but if the CEO has a high score in the second ‘trait’ – Agreeableness – the organizational culture will be proxy of a “Team Culture”.

The first dimension – Extraversion – suggests the individual is sociable, talkative, assertive and active with energy and enthusiasm when a high score is presented; if not, the individual is seen as cautious, introvert and a quiet person. Research revealed that an extrovert CEO shows more flexibility and is more likely to start a strategic change (Nadkarni & Herrmann, 2010); however, an extrovert CEO may play a dominant role within the team, and so the benefits may be dependent on team obedience or submissiveness (Gow *et al.*, 2016). This factor can facilitate the creation of internal and external cooperation networks by recognizing the importance of working as a team, and by making it easier to connect with others. On the other hand, it can lead to a culture too team-based, with great competition among teams, leading to the appearance of silos.

Agreeableness – the second ‘trait’ – reveals the tendency of a person to easily agree with others, of being kind, flexible, cooperative, good-natured and tolerant. A person with high score is seen as altruistic and trustworthy, and as preferring cooperation over competition. TMT with CEOs with high score in agreeableness are more likely to be cohesive and decentralized, as the CEO may encourage the team to share information and reach common goals, and seek consensus (Peterson *et al.*, 2003). Therefore, greater is the probability of the CEO creating an organizational culture more of a Team type, promoting the developing of both internal and external cooperation.

The third factor – Conscientiousness – shows that the individual is reliable, responsible, careful, organized, if classified with a high score. This dimension is a good indicator of a

person's job performance. Individuals with a high score tend to be more task-oriented than relationship-oriented. Teams led by this kind of individuals' will also be more task focused, working according to great ethical and legal levels (Peterson *et al.*, 2003). Nadkarni and Herrmann (2010) found a positive relation between this factor and book-to-market, which is consistent with Gow *et al.* (2016) findings that this trait is negatively related to firm growth. Some research revealed that CEOs with a high score in conscientiousness feel less attracted to innovative cultures, risk-taking and innovation (O'Reilly III *et al.*, 2014), hence the poor firm growth (Gow *et al.*, 2016). Therefore, they must increase internal cooperation, but could be too rigid to increase external cooperation networks.

Emotional Stability (or Neuroticism) is the fourth dimension considered, and a person with low score tends to react with impulsiveness and anxiety. If they present a high score, the individuals tend to be calm, less anxious, emotionally stable and to show some self-confidence. Therefore, emotionally stable CEOs are more willing to take risks, to face new situations and feel more attracted to innovative firms (Gow *et al.*, 2016), and less likely to cause conflicts among the team members (Peterson *et al.*, 2003). These CEOs are then more likely to promote the development of both internal and external cooperation networks, if they show a self-confident profile.

Lastly, the Openness to Experience factor puts into evidence how a person is open to new ideas and experiences. An individual with a low score is narrow-minded, while one with a high score is creative, imaginative, cultured, original, broad-minded and reflective. Research showed a positive relationship between this trait and R&D intensity, and a negative association with net leverage, which is supported by the idea that CEOs with a high score in openness are more likely to pursue new ideas, processes, and experiences (Gow *et al.*, 2016). Therefore, the likelihood of establishing and managing internal and/or external networks as a mean to have access to resources, new markets, innovation, knowledge and technology increases significantly. For Nadkarni and Herrman (2010), there is a positive association between this factor and strategic flexibility, which has a favorable impact on firm performance. Being more open and tolerant to others also causes an impact on culture.

2.3.2 Observable Characteristics

A literature review focused on the analysis of CEO characteristics revealed that most of the research exists on observable rather than on psychological characteristics, often because CEOs are not always willing to answer to lengthy psychological scales. Most of them focused their research on the influence of some characteristics, like age, formal education, functional background, and managerial tenure in firm performance, because these are observable and measurable (Wang *et al.*, 2016b).

While the personality influences how the CEO reads and interprets the environment, the organization and their capabilities (Finkelstein *et al.*, 2009), these observable characteristics may establish a link to internal factors as risk-taking, communication or social integration and to external features like status, reputation and social capital of top executives (Eisenhardt & Schoonhoven, 1996). Wang *et al.* (2016b) found that these characteristics are positively associated with firm strategic actions, which connect to firm performance.

Age

Considering the CEO age as being the length of time he had lived until data collection; older CEOs means people with more life experience and history, which certainly influence CEOs behavior'. For example, according to Hambrick and Mason (1984) younger CEOs tend to take riskier decisions than older ones which will reflect on their strategic actions, and in due time in firm performance.

More than three decades later, further research was carried out and revealed that CEO age has a negative relationship with strategic risk taking and product innovation, probably due to increased competition and to the overwhelming pace of technological innovation, showing that probably younger CEOs are more comfortable with these two strategic actions than older ones (Wang *et al.*, 2016b). Reinforcing this idea, Karami *et al.* (2006) found that young senior managers would tend to adopt riskier decisions and more innovative strategies than older managers. Another possible reason is given by

McClelland and O'Brien (2011) who argue that the older the CEO, the more risky-adverse the CEO becomes, as riskier strategies are likely to bring financial distress to the firm and so it might force CEOs to shorten their careers.

Managers' age tends to be positively associated to firm performance, thus older managers tend to be in firms with worse financial outcomes. However, Huang *et al.* (2012) found that the CEO's age is positively associated to firms' financial reporting quality.

Furthermore, Ng and Sears (2012) studied the impact of CEO leadership styles and personal attributes on the implementation of diversity practices and found that the CEOs' age and a firm's implementation of diversity practices are positively associated. In fact, CEO age and social values could perform as moderators of the impact of transactional leadership on the firm implementation of diversity practices.

CEOs' age is negatively related to firm global strategic position, the younger the managers, the more likely they are to engage in collaboration networks and follow internationalization strategies (Carpenter & Fredrickson, 2001). The CEO age affects firms' risk-taking behavior, thus "more risky firms tend to hire younger CEOs" (Serfling, 2014, p. 252). And a more risk-taking CEO will not only pursue riskier strategies, but will also encourage the creation of more flexible organizational cultures, like Entrepreneurial which is known for being favorable to creativity and risk-taking (Kalliath *et al.*, 1999).

However, age was found to be positively associated to the accumulation of social experience, meaning "social expertise" (Hess & Auman, 2001), and to servant leadership. This means that older CEOs are more capable to create empathy, foresight, persuasion and stewardship (McCuddy & Cavin, 2009), all each and every of these points facilitating relationship development, not only internally, developing internal networks, but also externally, engaging in collaboration networks.

Formal Education

The CEO formal education defined as the CEO education level, or school degree. The educational background of the executives reveals their knowledge, their values and their

skills, which may have an impact in organizational performance, once they are better prepared to interpret the environment (Hambrick & Mason, 1984). This is also truth to “improve not only their productivity but also those of the less-well-educated individuals with whom they work” (Blundell *et al.*, 1999, p. 15).

Moreover, CEO formal education was found to have a positive effect on firm strategic actions, and therefore on future firm performance (Wang *et al.*, 2016a).

CEOs with business degrees or higher levels of education are more prone to present a wider supply of creative solutions when complex problems turn up (Karami *et al.*, 2006). More educated and more skilled managers are “more rapidly and efficiently” adapted to new technologies and tasks, in their firms, thus being an important source of innovation to companies. Research showed that education and training increase enormously the ability of the worker to be innovative on the job (Blundell *et al.*, 1999). Already, Bantel and Jackson (1989, p. 107) when conducting their research on the effect in organizations of education of the TMT, have found that “more innovative banks are managed by more educated teams who are diverse with respect to their functional areas of expertise”. Therefore, the likelihood of having more innovative organizational cultures increases, as a reflection of CEO education and training.

Moreover, better-educated managers are more comfortable at responding to technological change (Blundell *et al.*, 1999), which might indicate that these managers tend to adopt organization cultures favorable to creativity, innovation and with a good response rate to changes in the environment. Also, managers with a management educational background are more willing to develop strategic plans and to put more emphasis on opportunities, than those who have no management educational background that tend to give more attention to threats than to opportunities (Karami *et al.*, 2006). CEO formal education was found to have a positive relationship with company strategic actions, namely because “their education experiences are reflected in their firms’ strategic actions”, and to future firm performance (Wang *et al.*, 2016a).

Management Diversity

This characteristic relates to the CEO experience in major functions, either in a different industry or organization, or with strategic actions. CEOs with a prior career experience in any given area of expertise, or role, would make a CEO better prepared to develop more firm strategic actions (Wang *et al.*, 2016a). Research revealed that a wider range of experience leads to a better and more thorough evaluation of alternatives, since the CEO has access to a larger pool of perspectives and skills (Simons *et al.*, 1999).

The effect of the executives' functional background and experience of the CEO are significantly related to the diversification strategy of a firm (Song, 1982). This happens because CEOs with a high degree of career variety are more likely to favor change and experiment, while CEOs with low career variety tends to pursue stability (Craig Crossland *et al.*, 2014). In fact, firms managed by CEOs with a wide career variety tend to show more strategic dynamism in terms of both resource reallocation and corporate strategy, and more strategic distinctiveness (Crossland *et al.*, 2014). This allows the CEO to have a better global vision, and less silo effects.

Moreover, CEOs with a diverse functional background expertise are more likely to present integrative capabilities and thus increase their effectiveness. The more generalist the CEO, the larger proportion of their functional background they will share, not only with the TMT members but with employees, promoting information sharing and stimulating communication among the teams (Buyl *et al.*, 2011). Greater becomes the likelihood of creating an organizational culture dominated by team values, enhancing the creation of internal networks, and diminishing the probability of having silos within the organization.

Managerial Tenure

CEO tenure is the length of time a person assumes the CEO role. Luo *et al.* (2014) analyzed how CEO tenure impacts on firm performance and found that CEO tenure is positively related to firm-employee relationship strength and negatively related to firm-customer relationship strength, having an effect on firm performance. Further research revealed that CEO tenure is negatively associated to firm strategic actions, and positively

related to future firm performance (Wang *et al.*, 2016a). In fact, CEOs do not behave always in the same way along their tenures (Henderson *et al.*, 2006).

Firms managed by CEOs with long and varied work experience are likely to be more successful than others managed by individuals with little work experience. Still to be mentioned that individuals with relevant work experience are due to put more emphasis on formal strategy development than those who are short of work experience (Karami *et al.*, 2006). Probably this happens because long-tenured CEOs tend to be deeply integrated in the firm's network of stakeholders and obtain and accumulate a more complete knowledge of the firm environment, tasks and some specific competences of the firm (Simsek, 2007).

Managerial tenure also has an impact on a firms' global strategic posture, in both high and low uncertainty contexts. Managerial tenure is positively related to a firm global strategy, in low uncertainty environments, but negative in highly uncertainty contexts. The more diverse is the management team in terms of tenure, the more global is the firm in a context of low uncertainty (Carpenter & Fredrickson, 2001).

CEO tenure will depend on how the external environment is likely to change or to remain stable and on how the management team can preview or anticipate any new potential business trends (Henderson *et al.*, 2006).

Shorter-tenured CEOs tend to better understand the changes in the external environment while CEOs holding the position for a long time tend to ignore any potential changes coming from the environment (Henderson *et al.*, 2006), and to rely on a narrower number of subordinates and on more filtered information as their tenure increases (Hambrick & Fukutomi, 1991).

Long-tenured managers tend to follow more persistent strategies, and strategies not very different from the strategies followed by the industry, having thus an effect on either strategy and performance of the firm, which tends to exhibit a performance very close to the industry average (Finkelstein & Hambrick, 1990). Therefore, long-tenured CEOs tend to pursue stable strategies in order to keep the firm market position, and most probably adopt cultures closer to "Market cultures" due to their emphasis on control and external focus. Once the CEO is often the main decision-maker, knowing the CEO characteristics

helps to understand most of the decisions, and to evaluate if the CEO is suitable for the strategy the firm aims to follow (Hsu *et al.*, 2013).

2.3.3 Social Capital

Organizations are largely affected by social relations, since “economic action is embedded in structures of social relations” (Granovetter, 1985, p. 481). Moreover, social relations relate to the way people, either individuals, or members of a group, interact with each other. Firms may enjoy a strategic advantage when individuals are members of multiple and separated networks, as they gain access to different sources of information and resources (Burt, 2000).

The role of social capital, which is a result of social interaction and network ties influences the development of human capital and the economic performance of companies. When there is a relationship of quality, then there is the basis of trust and of collective action, leading very often to a reconfiguration of resources within firm departments’ (Adler & Kwon, 2002). Coleman (1988, p. 98) argued that “social capital is defined by its function. It is not a single entity but a variety of different entities, with two elements in common: they all consist of some aspect of social structures, and they facilitate certain actions of actors – whether persons or corporate actors – within the structure”.

Social structures under the form of social networks affect the economic results of a firm. This happens because social networks influence the flow and the quality of the information, as people prefer to trust people, they know instead of relying on impersonal sources. Social networks may also reward or punish, which may have an impact since coming from acquaintances. And, at last because social networks help trust to emerge (Granovetter, 2005).

For this purpose, Granovetter (1985) believed that social relations are responsible for creating trust in economic life. In addition, he also recognized that networks of personal relations connect firms. Social capital may explain the success achieved by different individuals and companies in the competition they face every day. The actions of

individuals and groups can be facilitated by their direct and indirect connections to other actors in social networks. The main aspect of social capital is not about what you know, but about whom you know (Woolcock & Narayan, 2000).

Adler and Kwon (2002, p. 22) defined social capital as “the goodwill available to individuals or groups. Its source lies in the structure and content of the actor’s social relations. Its effects flow from the information, influence, and solidarity it makes available to the actor”. These authors also claim that most people are interested in valuable resources, so the main concern of social capital’s topic is that the goodwill that others have towards us is a very valuable resource. Goodwill refers to sympathy, trust and forgiveness given to us by our friends and acquaintances.

Social capital may also be considered as all the connections that individuals have, such as the actual or potential resources which are linked to a possession of a durable network of more or less institutionalized relationships or mutual acquaintance or recognition (Leek & Canning, 2011). There are some entities with at least two elements in common. By representing these entities, we could have either people or corporate actors, who consist in actors within the structure (Leek & Canning, 2011). The main goal of social capital is to have a competitive advantage, so it is used to access resources that will help companies or people to achieve those goals (Leek 2009).

Leek and Canning (2011) define it as trust, goodwill, norms, credibility, cooperation and reciprocity, being these various dimensions related to relationships. Those are also intrinsic characteristics of the individuals, such as intangible qualities. The individuals transmit them through their business’ interactions. In this case, the definition of social capital has three main elements in common, the relationship, what it provides in terms of access to resources and what it leads to in terms of benefits to the company.

For Inkpen and Tsang (2005, p. 151) the key element of the definition of social capital abides in the idea that “networks of relationships are a valuable resource for the individual or organization”. In fact, it is through social relations that social capital provides information to facilitate the action (Coleman, 1988). Many business relationships are a result of the personal sociability of business managers (Granovetter, 1985). The organization often extends the circle of exchange that takes place between the members,

increasing thereby identification and encouraging social norms of cooperation and risk taking.

The outcome of social capital leads to a general improvement in competitiveness, it improves the value of the relationship, which can be perceived in monetary or technical terms, service and social benefits, which increases the efficiency of action (Leek & Canning, 2011). Also, it is more and more frequent persons being considered by what they are, but also by whom they know, and by whom do they relate to, that is, by their network. If managers used their personal social relationships to create business for the company they worked for, it means that organizational social capital was created on the basis of an individual social capital (Inkpen & Tsang, 2005). The pattern of the relationships established through social ties are the basis of social capital, which offers the opportunity of gaining access to information and skills, enhances the creation and transfer of knowledge by the relationships and leaves the information flow (Nahapiet & Ghoshal, 1998), helping to improve the performance of the organization (Amoako-Gyampah *et al.*, 2018).

The benefits of social capital can be noticed in the influence, information and solidarity exchange among actors of a network, the so-called “bonding” social capital, and in the relations of one member to another, the named “bridging” social capital. The characteristics of social relations that contribute for the development of social capital are based on the opportunities born within the relations’ network, on the values and norms that regulate those network ties, and on the abilities of each network node to be mobilized by such friendly, kind feeling – the goodwill (Kwon & Adler, 2014).

2.4 MANAGERIAL DISCRETION

The concept of managerial discretion made its first appearance in the management literature more than 30 years ago, by Hambrick and Finkelstein (1987). Managerial discretion is understood as being the latitude of options CEOs have to make strategic decisions. High-discretion contexts increase the likelihood of the CEO influencing firm performance (Hambrick & Finkelstein, 1987). Managerial discretion defines whether organizational performance depends entirely on the CEO action, or completely on the

TMT decisions or is influenced by something else (Finkelstein & Boyd, 1998). The greater the managerial level of discretion the more likely it is for CEOs to have influence on firm performance (Finkelstein & Boyd, 1998).

A more competitive industry might require CEOs with greater managerial discretion to seize the larger number of opportunities and deal with more complex decisions competitive sectors offer (Hubbard & Palia, 1995).

There were mainly three sources of managerial discretion: the organization managed by the CEO, the environment, and the individual, the CEO (Hambrick & Finkelstein, 1987). Twenty years later a fourth source of managerial discretion was identified: the intrinsic characteristics of different managerial activities, (Finkelstein & Peteraf, 2007), therefore, there are some tasks that enable strategic actions in organizations. Just as some personal characteristics, organizations or types of environments might influence CEO strategic decisions.

However, Hutzschenreuter and Kleindienst (2013) argue that the degree of managerial discretion is influenced by personal, relational and situational characteristics. Therefore, CEOs' managerial discretion might be influenced not only by their personal characteristics, but also by the Top Management Team existence.

2.4.1 Top Management Teams (TMT)

The characteristics of top executives, such as the CEO, influence the strategies they plan, implement and control as well as the way the organization will perform, since firms are "reflections of their top managers" (Hambrick & Mason, 1984, p. 193). Also, Gow *et al.* (2016) argued that CEO personality is related to firm strategic choices and therefore to firm performance. And, because top managers tend to develop the organization strategic agenda based on their interpretation of the environment, which depends on the CEO experience, values and personality (Hambrick, 2007) the need to research on their characteristics emerges.

CEOs are organizational top executives, with decision power which enables them to have impact on the organization final choice to implement diversity practices (Hambrick & Finkelstein, 1987). Of course, this power within the firm depends on the level of managerial discretion, as organizations with high levels of managerial discretion might consider the CEO “as more critical to the firm’s success”, than others with low levels (Mackey, 2008).

Hambrick and Finkelstein (1987) claim that decision makers can only influence firm performance in proportion to the amount of managerial discretion they have and were later reinforced by Crossland and Hambrick (2011) who have found CEO effects exist proportionally to discretion.

The management of a firm is commonly a team activity, that is a result of the work of a small group of the most influential people within the organization. Sometimes, this group is designate as “management committee”, “executive committee” or top management team (Hambrick, 1995).

The concept of “Top Management Team” appeared in the academic literature around the eighties, being the Upper Echelons Theory (Hambrick & Mason, 1984) a reference, and since then, it has been widely used by both academics and practitioners.

The strategic success of a firm depends not only on one person (CEO), but on the entire top management team (Hambrick, 1987), therefore the relevance of exploring the role and the importance of top management teams (TMT) within organizations. In fact, the organizational outcomes are a function of the composition and of the characteristics of the TMT (Carpenter & Fredrickson, 2001). Further research concluded that CEO personality influenced the TMT dynamic and that TMT group dynamic influenced firm performance (Peterson *et al.*, 2003).

Moreover, TMT characteristics also affect the CEO’s capability of processing information as CEOs are part of a TMT, whose members have their defined functional responsibilities, and one of which is the sharing of information with the CEO. The more they (TMT and CEO) interact, the more the CEO gets information on specific issues or options (Hutzschenreuter & Kleindienst, 2013).

Therefore, TMT must be included in strategic decisions as they influence the attitudes within their firm and in future relationships (Kiessling & Harvey, 2004). These group of executives make a bridge between the organization and the environment and as they are at a strategic level in the firm, their ideas and decisions are likely to produce a huge impact on the organization (Carpenter *et al.*, 2004). Frequently, TMT get involved with the CEO in the strategy process, being responsible for the design, implementation and control of the strategy (Bowman & Kakadbase, 1997), therefore the CEO has no control on the strategy design nor on its implementation.

Most of the TMT are constituted by among five to fourteen members, all of them reporting directly to the CEO and performing tasks related to company support, service and external activities (Hambrick, 1995). The size of the TMT was found to be more positively associated to firm performance in turbulent environments than in stable environments; in fact, TMT effects were not significant in stable environments, whereas firms in turbulent environments with large teams were more profitable than firms with large teams in stable environments (Haleblian & Finkelstein, 1993). However, research revealed that “the size of the TMT is directly related to the amount of issues and options the CEO may perceive” (Hutzschenreuter & Kleindienst, 2013, p. 272). Although there are some advantages of larger TMTs, there are additional coordination and communication demands, which might subtract attentional resources to the CEO.

TMT tenure diversity affects the way information is processed while the TMT tenure separation has an impact in the way the process of social categorization occurs. TMT diversity relates to how different the TMT members are concerning a given attribute (Yi *et al.*, 2018). Some authors postulate that TMT diversity has a positive impact on team performance.

In general, individuals feel attracted and interact more often with similar individuals, so heterogeneous TMTs are more likely to have access to more information as compared to homogeneous TMTs, since their networks of social relationships are less likely to overlap (Hutzschenreuter & Kleindienst, 2013).

TMT external ties are also important as they were found to have influence over the design of the organizational strategy and thus have an impact on firm performance, in particular making it more similar to industry strategies, which came out to be beneficial to the

executives' external ties the alignment and fit with the firm's strategy (Geletkanycz & Hambrick, 1997). These findings revealed the relevance of considering executives' external contacts and the implications of TMT members working in a social and informational context that goes beyond the organization boundaries, once these external interactions help executives to access information and knowledge that may help to shape organizational strategy.

In the case of the CEO, the TMT characteristics might have a huge impact on "the scope and variety of issues and options perceived" by CEOs and on the degree of their managerial discretion (Hutzschenreuter & Kleindienst, 2013, p. 277).

2.4.2 Industry

According to Porter (1981), strategic actions reflect the environment of the industry, which then determine firm performance. From this point of view, CEOs only matter to choose the industry in which firms should compete, and industry is the biggest responsible for any changes in firms' strategic actions (Zacharias *et al.*, 2015).

However, research revealed that there are industries allowing greater managerial discretion than others, as CEOs' actions might be limited by external forces (Hambrick & Abrahamson, 1995). Already, Finkelstein and Hambrick (1987) had identified seven industry related factors working together affecting managerial discretion, like product differentiability, market growth, industry structure, demand instability, regulation constrains, powerful outside forces and capital intensity.

Hutzschenreuter and Kleindienst (2013) argued that CEOs' degree of discretion is likely to change over time, with the evolution of industry characteristics. The more dynamic the sector, the greater the level of uncertainty CEOs have to deal with. In fact, in dynamic industries, CEOs were found to be at their best during their first year in functions while in stable sectors, CEOs often require a period of adaptation and only after some time their decisions start having impact in firm performance (Henderson *et al.*, 2006).

If the firm belongs to an industry still with sustained growth then CEOs tend to have greater managerial discretion to make their strategic decisions (Hutzschenreuter & Kleindienst, 2013).

2.4.3 Firm Size

Research revealed that firm size is related to the profitability, productivity and survival of a firm and can affect firm growth (Beck *et al.*, 2005).

Firm size influences organizational inertia, this means that large firms usually face more difficulties in undertaking severe changes, due to their established routines and rigid hierarchical structures (Hambrick & Finkelstein, 1987). Organizational inertia tends to be greater, and managerial discretion lesser, the larger the firm is (Finkelstein & Hambrick, 1990).

Additionally, the larger the firm, the more difficult it is for CEOs to have influence in the decision-making process, since larger firms are more likely to present hierarchical structures and more decentralized and formal decision making (Papadakis, 2006).

CEOs of small firms are more likely to add firm ownership to their managerial role than CEOs of large firms (Demsetz & Lehn, 1985).

Moreover, larger the firm, the more prone it is for their CEOs to hubris, and less likely to develop collaboration relationships, as they tend to feel “more important socially, have succeeded in growing the firm, or simply face fewer obstacles in making acquisitions because their firm has more resources” (Moeller *et al.*, 2004).

Large firms are more likely to have financial or human resources beyond those used in ordinary operations, which enables firms to engage in new innovation projects when there are financial slack resources, or when slack resources are human, firms tend to create a department to manage collaborations with external organizations. Therefore, Yu and Lee (2017) found that larger firms are more likely to be innovative and more prone to engage in collaboration networks.

2.5 CONCLUSION

The aim of this research is to understand the role and importance of CEO characteristics in firms' ability to build inter and intra collaboration networks by creating organizational cultures favorable to the development of both internal (lack of silo effect) and external networks.

Literature review provides theoretical evidence that CEO personal characteristics, both psychological (extraversion, openness to experience, agreeableness, conscientiousness, emotional stability) and observable characteristics (age, formal education, managerial tenure and managerial diversity), and social capital have impact on the organization, specifically on organizational culture and on the firm ability to develop internal network collaboration (lack of silo effect), and on their ability to establish and develop external networks, be it with complementors, competitors, customers, providers or research entities (Research centers, Laboratories, Universities). This CEO managerial effect might be mediated by the existence of a TMT, in addition to the CEO, by industry specificities, like product differentiation or market growth just to mention a few, and by the size of the firm. So, the CEO is likely to have greater or minor influence on the organization depending on the existence or not of a TMT (Hutzschenreuter & Kleindienst, 2013); on the dynamism of the industry, as the more dynamic the industry is, greater the level of uncertainty CEOs have to deal with (Hutzschenreuter & Kleindienst, 2013); and on the size of the firm, larger firms tend to be more innovative and to engage in collaboration networks (Yu & Lee, 2017), leaving little room for the CEO to influence the decision-making process (Papadakis, 2006).

Organizations need to collaborate with other firms if they want to achieve their goals (Alexander, 2014) as firms do not depend only on their individual efforts, they also depend on the activities and performance of other firms, and on the relationships they maintain with their stakeholders (Wilkinson & Young, 2002). These relationships may enhance a firm competitive advantage (Davies *et al.*, 1995) since they might allow the firm to have access to resources like information, technology, markets and knowledge which are in the hands of others (Håkansson & Snehota, 1995).

For instance, having a good relationship with a complementor may be crucial, if both parts have their interests aligned and their points of conflict identified, greater the probability of benefiting from the opportunities offered by their cooperation relationship in terms of pricing, technology or degree of market control (Yoffie & Kwak, 2006).

Due to a greater global competition it is frequent to have firms competing in one market and cooperating in other market and this kind of collaboration happens to allow both organizations to benefit from sharing costs, risks and knowledge (Alves & Meneses, 2015) and remain competitive in the market.

Other option to maintain their competitiveness is to look for innovation outside the firm boundaries, and collaborate with universities ou research centers, which are important sources of scientific knowledge and technology, by participating in research projects and consultancies (Hansen *et al.*, 2017).

More and more firms are outsourcing their business activities which forced the emergence of customer-supplier partnerships (Ford *et al.*, 2002) and made firms to specialize in the areas of their core competences favouring the creation of supplier cooperation networks (Möller & Halinen, 1999).

Nowadays, it is even more true that organizations work as open systems (Katz & Kahn, 1966) as they must adapt to the environment if they want to survive (Hambrick, 1982). However, to be able to manage to adapt the organization to the environment, CEOs should try to reduce the presence of silo effect within the organization, by communicating consistent and coordinated goals, ensuring there is sharing of information through organizational structure and a clear definition of tasks and responsibilities (Schütz & Bloch, 2006). This is possible if CEO characteristics have influence in the culture of the organization, since there are some organizational cultures more prone to lead to employee collaboration, and to firm collaboration with stakeholders than others.

There are organizational cultures more favorable to the appearance of internal cooperation networks like team cultures which encourage decentralization, autonomy and mutual help, or like entrepreneurial cultures which are often considered open systems, favorable to creativity, innovation and developing multidisciplinary projects (Cameron & Quinn, 2011). Rational cultures tend to understand the advantages of building both internal and

external relationships however not always this happens effectively, each case is a case-study.

Having or promoting internal network cooperation within the organization depend on how CEO characteristics influence the firm, not only organizational culture, but also the firm ability to build internal network cooperation, and thus reduce the existence of silos. This is, the CEO personal characteristics will have a strong influence in the culture of the firm, which will have reflections on how the employees relate to each other (internal collaboration networks), and in how the firm relates to the other stakeholders (competitors, complementors, research centers, just to name a few).

Organizational culture not only work as a control mechanism offering employees a framework to internalize their roles and behaviors within the organization (Deshpandé & Webster, 1989), but also influence employee engagement and motivation (Groysberg *et al.*, 2018), and the way employees relate to each other and how they look after new members (Helfrich *et al.*, 2007).

Nevertheless, organizational culture is often a reflection of the values, thoughts, actions and decisions of CEOs. In fact, managers can build an organizational culture with a powerful influence on employee behavior, as values and norms can become artifacts and lead to desired behaviors (Mumford *et al.*, 2002).

CEOs are responsible for the firm's management, so their personal characteristics have a huge influence on the firm (Carpenter *et al.*, 2004; Finkelstein *et al.*, 1996; Zacharias *et al.*, 2015). This influence might be constrained by the existence of a TMT, or by the effect of the industry or by the size of the firm (Zacharias *et al.*, 2015).

CEOs personality characteristics influence the way CEOs process information about their capabilities, about the firm and the environment (Finkelstein *et al.*, 2009) and observable characteristics refer to the background of CEOs and provide much of the knowledge and values that shape a firm strategy (Hambrick & Mason, 1984).

Therefore, in the following section it is presented a theoretical framework which describes the possible relationships among the concepts discussed in this chapter, and the research hypothesis based on the literature review.

THEORETICAL FRAMEWORK

3 THEORETICAL FRAMEWORK

The conceptual model presents three levels of analysis, the first one being focused on the individual, the CEO, and his characteristics: psychological, observable and social capital; the second shows the organization with its culture and silo effect; and, the third unity of analysis is dedicated to networks with complementors, competitors, suppliers-customers and research centers/laboratories/universities. In *Figure 3*, there is the conceptual model of this research.

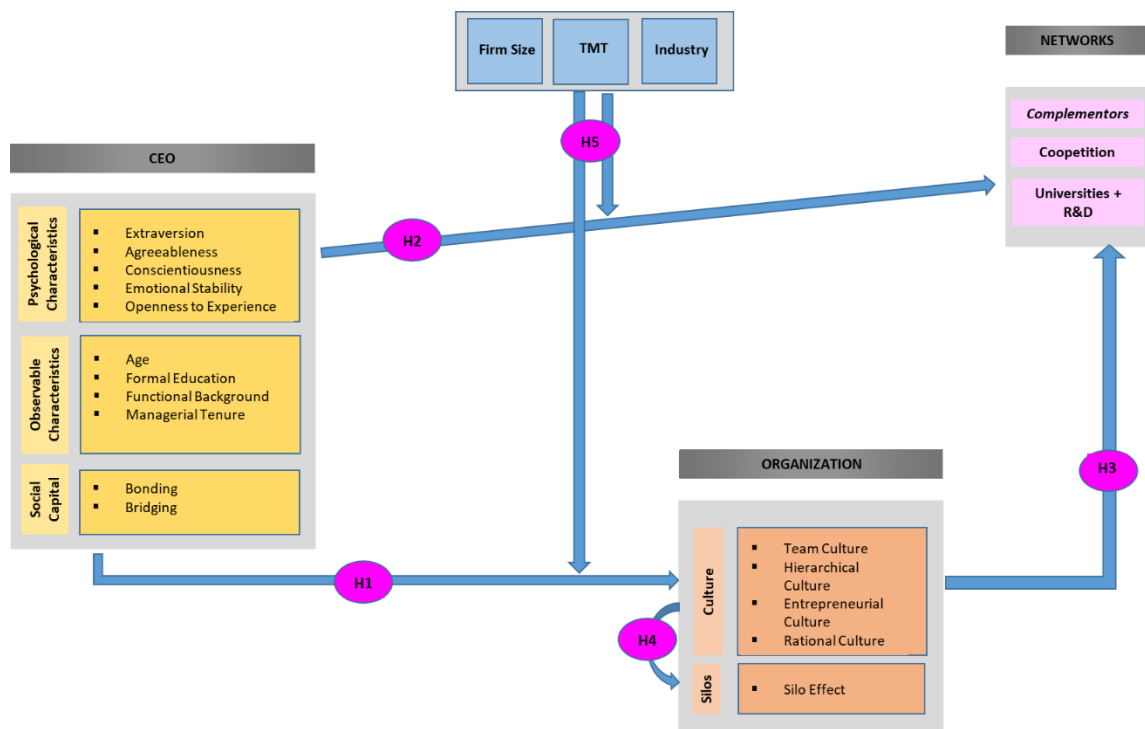


Figure 3 - Design of the Theoretical Framework.

First Level of Analysis - The CEO is an individual, like any other executive of the top management team, with different personal traits, different age, formal education, functional background and managerial tenure, with values, skills, experience and network of contacts.

Second Level of Analysis - The Organization with its own culture, reflecting its own beliefs, values, norms and artifacts, which may encourage or inhibit the existence of silos within the organization.

Third Level of Analysis – Networks, with firms offering complementary products or services – complementors, with firms offering similar products/services – competitors, the so-called cooptation networks, customer-supplier, and university-industry collaboration viewed by firms as a mean of reducing R&D costs, and of enhancing industry capacity of innovation. These networks can be formal or informal.

Observable characteristics like age, formal education, managerial tenure and management diversity are positively associated with firm strategic actions (Wang *et al.*, 2016b) and may establish a link to internal factors of the organization like risk-taking, communication or social integration (Eisenhardt & Schoonhoven, 1996). Also, Karami *et al.* (2006) found that young senior managers tend to follow riskier decisions and more innovative strategies than older managers. And, a more risk-taking CEO will encourage the creation of more flexible organizational cultures (Kalliath *et al.*, 1999).

CEOs with high level of education tend to adopt organization cultures favorable to creativity, innovation and with good response to environmental changes (Blundell *et al.*, 1999).

An organization is a result of people's behaviors, as people define the way an organization looks, feels, and behaves. Therefore, the characteristics of people "are the fundamental determinants of organizational behavior" (Schneider, 1987, p. 437). If people define the way an organization behaves, then individuals' characteristics are determinants of organizational performance (Schneider, 1987).

CEOs characteristics have not only an impact in organizational performance, but it is expected that some CEO characteristics might have some influence in organizational culture.

So, it can be said that

Hypothesis 1a. – CEO observable characteristics have impact on the organization (Culture and Silos)

CEOs with a low score in the Extraversion dimension of the Big Five Framework, being cautious, introverted and quiet persons, will have more difficulty in developing their social capital, and therefore business relationships, meaning cooperation networks. In the same way, an executive with low score in Agreeableness will be seen as being not to be trusted and will hardly be able to connect with other managers, as these may be reluctant to develop any kind of personal or business relationship. This may happen, because most firms prefer to negotiate with individuals of known reputation to avoid risks, instead of relying on institutional arrangements (Granovetter, 1985).

Extroverted CEOs may play a dominant role within the team (Gow *et al.*, 2016), as they tend to be sociable, talkative, assertive and active with energy (Costa & McCrae, 1992), and so, they are more likely to have a positive impact in organizational culture, mainly in helping to create an organizational team culture.

Additionally, CEOs with high score in agreeableness are more likely to be cohesive and decentralized, as the CEO may encourage the team to share information and reach common goals, and seek consensus (Peterson *et al.*, 2003).

If the CEO has a high score in Agreeableness, then it is most probably that the organizational culture will be proxy of a “Team Culture”, because individuals with high score in agreeableness are kind, cooperative, flexible and tolerant (Costa & McCrae, 1992).

Furthermore, individuals with a high score of conscientiousness tend to be reliable, responsible and organized and more task-oriented being more likely to create a rational culture. Some research revealed that CEOs with a high score in conscientiousness feel less attracted to innovative cultures, risk-taking and innovation (O'Reilly III *et al.*, 2014).

Also, emotionally stable CEOs are more willing to take risks, to face new situations and feel more attracted to innovative firms (Gow *et al.*, 2016), and less likely to cause

conflicts among the team members (Peterson *et al.*, 2003), but more likely to create an entrepreneurial culture.

An organization with a CEO with a high score in the Openness to Experience factor, will probably present an organizational culture with characteristics closer to “Entrepreneurial Culture”, since these CEOs are regarded as creative, open to new ideas and experiences (Gow *et al.*, 2016).

Respondents to a survey on internal collaboration led by the American Management Association have pointed out the manager attitude as the main cause for the existence of silos (Stone, 2004). Stone (2004) argued that the leader personality or management style might avoid or encourage the existence of problems among departments, and therefore contribute to the creation of the silo effect, making it more difficult for the employees to establish informal relationships among them and with stakeholders.

However if the CEO communicates consistent and coordinated goals, if the CEO ensures that there is a flow of information through management and among functional areas, that there is a clear responsibility definition and work processes and promotes inter-departmental meetings, the organization may be well prepared to avoid the silo effect (Schütz & Bloch, 2006), by encouraging employees to develop jointly activities and information sharing initiatives, to work with whoever it might be necessary to get the job done.

So, it can be said that

Hypothesis 1b. - CEO psychological characteristics have an impact on the organization (Culture and Silos)

Further research shows that the accumulation of social capital within the organization may lead to some improvements in culture, and therefore may help the adoption of new theories and technology due to stronger ties among firm members (Amoako-Gyampah *et al.*, 2018).

Social networks influence the flow and the quality of the information, as people prefer to trust people they know instead of relying on impersonal sources, so social networks helps trust to emerge (Granovetter, 2005).

For Inkpen and Tsang (2005, p. 151) the key element of the definition of social capital abides in the idea that “networks of relationships are a valuable resource for the individual or organization”. In fact, it is through social relations that social capital provides information to facilitate the action (Coleman, 1988). Many business relationships are a result of the personal sociability of business managers (Granovetter, 1985).

So, it can be said that

Hypothesis 1c. - CEO social capital has an impact on the organization (Culture and Silos)

Besides personality characteristics, there are effects of observable characteristics worth studying, like CEO heterogeneity in demographic features, which reveals a tendency to pursue alliance formation and therefore to establish cooperation networks (Carpenter *et al.*, 2004). The more heterogeneous the executives are, the more prepared they are to deal with the greater complex relationships, networks bring (Ferrier, 2001).

Formal education may also be crucial in establishing strong inter-organizational ties, as it implies membership in a given socioeconomic group (Hambrick & Mason, 1984).

Those formal and informal relationships among industry and universities may be due to the founders' educational qualifications and to their links to those organizations (Westhead & Storey, 1995). This happens because universities and other higher education institutions are a relevant source of scientific knowledge, and therefore industry can have access to this knowledge by developing formal and informal relationships with those entities, and thus encourage innovation and production, since universities are often an extension of the R&D of the firm.

The Decisor's age is negatively related to firm global strategic position; the younger the manager, the more likely he is to engage in networks and to follow internationalization strategies (Carpenter & Fredrickson, 2001).

So, it can be said that

Hypothesis 2a. – CEO observable characteristics have an impact on formal Cooperation Networks

Extrovert CEOs are sociable and talkative being therefore more likely to engage in establishing networks, internally and externally, by using their social network, since extrovert CEOs are more flexible and more prone to start strategic change (Nadkarni & Herrmann, 2010). Extraversion may facilitate the creation of internal and external networks by emphasizing team work and making it easier to relate to others either within the firm or with other firms.

A person with a high score in agreeableness is seen as being flexible, cooperative, good-natured, tolerant and as preferring cooperation over competition (McCrae and Costa, (1992) so CEOs with this profile are more likely to pursue networks than individuals with low score in agreeableness (Peterson *et al.*, 2003), due to their cohesive, team and consensual nature.

CEOs with a high score of conscientiousness tend to be more task-oriented than relationship-oriented (Peterson *et al.*, 2003), so they are less likely to develop networks as they are focused in having the tasks accomplished and in delivering results, instead of building informal networks to allow firms to reach their goals faster.

So, it can be said that

Hypothesis 2b. – CEO psychological characteristics have an impact on formal Cooperation Networks

Organizations are connected by networks of personal relations (Granovetter, 1985), so firms with top executives with a given set of characteristics and greater social capital will be preferred by partners to establish business relationships, and therefore networks. Still, if many business relationships are a result of the managers social capital (Granovetter, 2005) then it is expected that networks, be it among competitors, complementors or university-industry are also a result of the executives' social capital.

Granovetter (1985) believed that social relations are responsible for creating trust in economic life. And, he also recognized that firms are connected by networks of personal relations and because many people prefer to work with people they know, this might explain why many business relationships are a result of the personal sociability of business managers, and this happens not only at the top of the firm, but at all levels in which business occurs (Granovetter, 1985).

In fact, the success of the cooperation relationship relies on the quality of the existent relationship between the involved actors, in particular because some rules for the cooperative interactions are tacit as they are based on their previous experiences (Dahl, 2014).

The existence of previous personal relations among the individuals can help the establishment of coopetition relationships once an individual social capital is recognized to facilitate the flow of knowledge (Schmiele & Sofka, 2007). Research shows that partner selection is mainly based on either task-related or on partner-related criteria (Das & He, 2006), so “the inter-personal relationships between entrepreneurs or decision-makers” should be considered in coopetition relationships (Alves & Meneses, 2015, p. 26).

The reason why individuals pursue a win-win relationship abides in the social structure and not in the individuals' motives and interests. It is the industry structure that forces firms to compete, but it is the social structure that explains why they cooperate with each other, even if they are competitors (Bengtsson & Kock, 2000).

So, it can be said that

Hypothesis 2c. - CEO social capital has an impact on formal Cooperation Networks

Organizational culture plays an important role in knowledge transfer, and this requires willingness of the individuals to work with others and share knowledge to their benefit, and also breaking down hierarchies within the organization (Goh, 2002). Nevertheless, this depends on the type of organizational culture the firm has. So, organizations with values revealing an external focus and emphasis on flexibility, called “Entrepreneurial Cultures” are more likely to establish and develop networks, as they are risk takers, since they are usually considered open systems, favorable to creativity and innovation (Kalliath *et al.*, 1999).

If the organization presents values showing an internal focus and an emphasis on control, with formal rules and procedures, with good definition of the employees’ responsibilities and with tendency to show centralized authority (“Hierarchical Cultures”), then they are less likely to engage in networks (Cameron, 2009; Helfrich *et al.*, 2007).

The same can happen in organizations with values closer to “Rational Cultures”. These cultures are known for pursuing efficiency and measurable outcomes (Kalliath *et al.*, 1999), which tend to influence their employees to be competitive, to be the best, the first one, ignoring the others’ concerns and worries. Both “Rational” and “Hierarchical” cultures are less prone to engage in business relationships either internally, with other departments or locations, or externally with other firms, be it competitors, complementors, suppliers, customers or universities.

So, it can be said that

Hypothesis 3a. – Organizational culture has an impact on formal Cooperation Networks

Silos can be a result of an organization structure divided into different organizational units containing their team, lacking motivation to work, or communicate with other divisions

(Aaker, 2008), creating an environment in which personal and function interests may prevail over organizational goals and well-being (Stone, 2004).

When there are communication problems and fragmented behaviors, then it is most likely that there is a lack of co-operation among functional units and external relationships with other organizations, or stakeholders are neglected (Vatanpour *et al.*, 2013), thus inhibiting the creation of networks, either formal or informal.

The existence of silos not only has an impact on the firm, in the way it performs, in the employees, but also on the customers (Fenwick *et al.*, 2009). In fact, by neglecting the connections to the stakeholders (employees included), the organization may be missing business opportunities related to innovation, creativity or efficiency and incur in additional costs (Fenwick *et al.*, 2009).

So, when there is a silo in an organization, the organization is less likely to engage with networks.

So, it can be said that

Hypothesis 3b. – Organizational silos have an impact on formal Cooperation Networks

Organizational culture also influences the way employees relate to each other, and also how they look after new members, so it has been pointed out as an important barrier to the flow of new knowledge and innovations (Helfrich *et al.*, 2007).

Recently, Groyberg *et al.* (2018) found that organizational culture influences both employee engagement and motivation, that is the closer they feel to culture elements, the more motivated and engaged the employees are.

Stone (2004) identified that a competitive organizational culture may inhibit the development of any team spirit within the firm.

If the organization presents values showing an internal focus and an emphasis on control, with formal rules and procedures, with good definition of the employees' responsibilities and with tendency to show centralized authority (Cameron, 2009; Helfrich *et al.*, 2007), then they tend to reveal the existence of silos, once employees tend to do exactly what they are supposed to do, and so their focus is on their responsibilities, and on their functions neglecting the others.

In organizations where employees are induced to be the best, the first ones, to be competitive, then there is silo mentality because the individuals are focused only in working in their best interest, with the purpose of achieving their best performance regardless the impact their behavior may have on others (Hotaran, 2009).

Often, within an organizational culture different subcultures can be found, giving the idea that there is the "us" (the ones who belong to the same department) and the "others" (from the other departments), conducting to the emergence of the "silo effect" (Bevc *et al.*, 2015) and to the lack of communications and relationships among firm departments and with firm stakeholders.

So, it can be said that

Hypothesis 4. – Organizational culture has impact on the creation of Silos

Larger the firm, the more difficult it is for CEOs to have influence in the process of decision-making, since larger firms are more likely to present hierarchical structures and more decentralized and formal decision making (Papadakis, 2006).

Also, the TMT characteristics might have a huge impact on "the scope and variety of issues and options perceived" by CEOs and on the degree of their managerial discretion (Hutzschenreuter & Kleindienst, 2013, p. 277).

Moreover, Hutzschenreuter and Kleindienst (2013) stated that CEOs' degree of managerial discretion is likely to change with the evolution of industry characteristics. The more dynamic the industry, greater the level of uncertainty CEOs have to deal with.

Most of the literature on the Upper Echelons Theory argue that CEO managerial discretion is affected by the influence of TMT characteristics, firm size and of the industry where the organization belongs.

So, it can be said that

Hypothesis 5. – Firm Size, TMT existence and Industry affect the influence of CEO characteristics in the organization and in establishing Networks

3.1 CONCLUSION

This research aims at developing a theoretical model that makes it possible to identify which CEO personal characteristics have more impact in organizational culture and silo effect, this is in the organization ability to develop and manage internal and external networks either by studying how the employees relate to each other to have their job done, either by analysing how firms relate to their stakeholders, whether informally or in a more formal way in order to achieve their goals.

Therefore, the theoretical framework integrates all the key constructs related to the demographic characteristics (Age, Formal Education, Management Tenure and Management Diversity), the five constructs of the Big Five Framework to feature the psychological side of the CEO, the four types of organizational cultures and the constructs to assess the degree of silo in the organization (informal internal networks), and the (formal) networks with complementors, competitors, customers-providers, and research centers/laboratories or universities.

The goal of this research is to see which CEO characteristics are more likely to influence organizational culture, and the existence or the lack of silos. Have the observable characteristics more influence? Or, have the personality characteristics, or the CEO social capital a greater impact in organizational culture, and in how the employees relate to each other, and to other firms to have their work done? Which CEO characteristics best allow

the firm to achieve their goals and to be seen as an active player within the industry, or be a member of a collaboration Network with a stakeholder?

In the next chapter, a description of all methodological options, data collection and data analysis are presented.

METHODOLOGY

4 METHODOLOGY

The literature review on the characteristics of the CEO, on the culture and silo effect of the organization, and on the different types of networks was the starting point for the design of the theoretical framework, and for the formulation of the research hypothesis.

The objective of this chapter is to expose and explain the methodology followed during the empirical stage of the research.

CEOs of firms belonging to two different sectors were invited to answer a questionnaire built taking into consideration the literature review, with the purpose of collecting data related to each construct of the empirical model and observing how those variables behave.

Further down, it will be presented the sectors selected and the reasons behind that option, then the methodology adopted to build the questionnaire, and its structure will be described. The methodological guidelines followed during data collection and data analysis shall also be addressed in this chapter.

4.1 OBJECTIVE

Networks are important because more and more companies seek to develop their activity by taking advantage of their connections, whether internal or external (be it firms offering complementary or substitute products, clients and providers, and universities or research centers), formal or informally.

Increasingly, companies are nowadays closer to the academic world, either through the provision of traineeships to students, through the signature of joint investigation protocols, through market research, or through the development of new products. Technologies and social networks also play an important role, in the midst of all this, because they bring people together, by facilitating the communication between them. The social capital of the individual ends up favoring the development of networks, both internal and external. When it influences the creation of internal networks, within the

organization, it ends up preventing the existence of silos. Additionally, the literature argues that the CEO characteristics' influence both attitudes and behaviors of individuals across all hierarchical levels (Ou *et al.*, 2014), thus influencing the organizational culture, and obviously the ability to establish networks in the environment.

4.2 SECTORS STUDIED

According to the literature, as the industry has a moderating effect it was decided to study two sectors, one of services, Accommodation Activities, a more dynamic sector and the other from industry, the Food, Beverage and Tobacco Industry, this one with a sustained growth.

The contacts of firms of both sectors were obtained by getting access to SABI, a database which contains an exhaustive information on Portuguese companies from almost every industry. Besides using the sector as filter, it was also used as filter for the firm contact info, and only the active companies were selected. In the end, the selection produced a database with 5,556 active firms with email address, telephone number and address, of the Accommodation Activities Sector, and from the Food, Beverage and Tobacco Industry.

These two sectors were chosen due to a variety of reasons. First, because the Accommodation Activities Sector has seen a very significant growth in the last years in Portugal, due to the great increase in Tourism, whose income increased 20.3% in the last year². Just to have an idea, the Accommodation sector grew about 21.3% in 2015, and about 10.74% in 2016, according to the Portuguese Stats Bureau, in number of accommodation facilities. The same happened with the number of firms in the Accommodation sector, which have increased 2.32% in 2014, 9.16% in 2015 and 6.25% in the year 2016, as shown in Table 1. In this sector, the number of employed people grew 8,3%, and the gross added value increased 21.4%, in 2016. The number of guests in hotel establishments grew more than 79% in the last 10 years.

² Portuguese Tourism Income. (2018, March 14). Retrieved from http://www.turismodeportugal.pt/pt/Turismo_Portugal/Estrategia/Estrategia_2027/Paginas/default.aspx

Years	Number of Guests in hotel establishments	Number of Rooms in hotel establishments	Number of Hotel establishments
2000	10 317 217	97 709	1 786
2001	10 185 175	103 081	1 895
2002	┘ ¹⁰ 546 892	┘ 105 805	┘ 1 890
2003	10 413 852	108 367	1 934
2004	10 901 968	112 659	1 954
2005	11 469 289	┘ 116 123	┘ 2 012
2006	12 376 941	117 565	2 028
2007	13 366 173	117 976	2 031
2008	13 456 372	121 013	2 041
2009	12 927 907	120 737	1 988
2010	13 537 040	124 542	2 011
2011	13 992 782	128 336	2 019
2012	13 845 419	131 357	2 028
2013	┘ 15 209 605	┘ 145 020	┘ 3 345
2014	17 301 622	151 896	3 578
2015	19 161 180	158 853	4 339
2016	21 252 625	166 448	4 805
2017	23 953 765	175 056	5 840

Table 1 - Indicators of the Dynamism of the Accommodation sector

Source: INE

Portugal is more and more visited by people coming from the most different countries in the world, who feel attracted by not only the natural attractions of Portuguese beaches and countryside, but also by the monuments and historic attractions of the cities, and of gastronomy and wines.

Therefore, it was decided to include the Food, Beverage and Tobacco Industry mainly due to its slow growth rate, when compared to the growth rates of the Accommodation

sector, practically close to maturity, as exhibited in Table 2, the Investment in this industry grew only by 0.23% in 2015, Exports increased 1.13%, most probably due to the increase in tourism, Gross Production Value grew 1.2% and the Gross Operating Surplus increased 2.6%. Another reason to include firms from the Food, Beverage and Tobacco Industry was the apparent complementor relationship that this industry might have with the Accommodation sector.

Years	Exports (Million €)	Gross Production Value (Million €)	Gross Fixed Capital Formation (Million €)	Gross Operating Surplus (Million €)
2000	1 761,4	11 846,41	469,85	1 107,32
2001	1 799,6	12 574,69	493,94	1 306,82
2002	1 981,6	12 524,19	573,26	1 426,23
2003	2 021,5	12 527,63	585,15	1 512,34
2004	2 146,7	12 975,57	586,02	1 624,11
2005	2 341,0	13 071,30	577,07	1 659,40
2006	2 723,1	13 469,95	605,65	1 648,09
2007	3 206,5	14 393,63	753,18	1 586,10
2008	3 611,1	15 578,66	896,13	1 634,93
2009	3 345,7	14 741,21	726,66	1 869,40
2010	3 619,7	14 811,45	702,75	1 838,72
2011	4 077,3	15 364,13	725,57	1 826,28
2012	4 302,5	15 549,02	698,92	1 732,41
2013	4 744,0	15 906,57	667,42	1 852,95
2014	4 966,9	15 959,78	735,89	2 064,10
2015	5 022,9	16 150,93	737,61	2 117,34

Table 2 - Indicators of the Food, Beverage and Tobacco Industry

Source: INE

Moreover, it is thought that Portuguese wine is the responsible for that growth and not the other beverages, or food or tobacco as the Portuguese wine is most appreciated by tourists, in particular, Port Wine (Table 3). In fact, nearly 85% of bottled Port Wine, in volume, was exported between January and April 2018³. And, in 2017, a total of 2,985,815 HL of Wine⁴ worth 777,924 (000) € were exported.

Intra + Extra UE	HL jan - dec		1 000 € jan - dec		Growth Rate 2017/2016	
	2016	2017	2016	2017	HL	1 000 €
Wine with Origin (PDO)	550 187	600 178	165 481	184 496	▲ 9,1%	▲ 11,5%
Wine with PGI	430 162	504 428	105 879	126 771	▲ 17,3%	▲ 19,7%
<i>Wine (ex-table)</i>	<i>1 069 819</i>	<i>1 156 551</i>	<i>109 885</i>	<i>119 939</i>	▲ 8,1%	▲ 9,1%
Wine	1 031 072	1 123 492	102 407	114 643	▲ 9,0%	▲ 11,9%
Wine with indication of grape	38 747	33 059	7 478	5 297	▼ -14,7%	▼ -29,2%
<i>liquor wine with PDO/PGI</i>	<i>678 394</i>	<i>682 688</i>	<i>327 636</i>	<i>332 650</i>	▲ 0,6%	▲ 1,5%
<i>Porto</i>	<i>650 875</i>	<i>644 809</i>	<i>311 438</i>	<i>312 154</i>	▼ -0,9%	▲ 0,2%
<i>Madeira</i>	<i>21 508</i>	<i>28 794</i>	<i>14 163</i>	<i>17 549</i>	▲ 33,9%	▲ 23,9%
<i>Others</i>	<i>6 011</i>	<i>9 084</i>	<i>2 035</i>	<i>2 947</i>	▲ 51,1%	▲ 44,8%
Liquor Wine without PDO/PGI	9 487	3 373	2 589	940	▼ -64,4%	▼ -63,7%
Sparkling Wines	17 691	13 948	7 952	8 243	▼ -21,2%	▲ 3,7%
Other wines and musts	21 892	24 650	4 247	4 884	▲ 12,6%	▲ 15,0%
Total	2 777 631	2 985 815	723 671	777 924	▲ 7,5%	▲ 7,5%

Table 3 - Wine Exports by type

Source: IVDP

4.3 QUESTIONNAIRE CONSTRUCTION

The questionnaire (c.f. Appendix A) was built based on the information collected during the literature review stage, related to the constructs used in the theoretical framework. The use of scales which had already been used, tested and validated by previous research

³ Porto Wine Exports. (2018, 15th July) Retrieved from <https://www.ivdp.pt/pagina.asp?codPag=204&codSeccao=6&idioma=0>

⁴ Porto and Table Wine Exports. (2018, 15th July) Retrieved from <http://www.ivv.gov.pt/np4/37/>

was a permanent concern during the preparation of the questionnaire. So, each construct was measured by scales which had already been tested and validated by previous research (in different contexts).

The target audience of the survey was the person in charge of the decision-making process, be it the CEO, the General Director or Manager, the Administrator, the Partner, whoever was in charge of the strategic decision, in the firm. In the introductory note of the questionnaire this was referred, and so were the identification of the researcher, and the scope of the study.

The questionnaire comprehends two groups of questions: one related to the individual, the characteristics of the CEO, and the second more focused on the organization, culture and silo effect, and cooperation networks.

The first question is a filter question (Question A1), that is, if the person who opened the questionnaire was not the CEO or the General Manager/Managing Director/Partner then the questionnaire ended, and the availability of the person was thanked. If it happened to be the CEO or the person in charge of the decision-making process, then the questionnaire proceeded.

The next questions were related to the demographic variables of the individual, and age (Question A2), sex (Question A3), the highest completed degree of formal education (Question A4), and the field of formal education (Question A5), using the ISCED fields of education and training (ISCED-F-2013) were asked.

Afterwards the number of years working in the firm (Question A6) was asked, to assess the firm managerial tenure, then the number of years of experience in the industry (Question A7) was questioned, in order to have an idea of the industry tenure of the individual. It was also asked in which industry the individual developed his previous professional experience (Question A8). All these questions were based on the questionnaire used during the research conducted by Carpenter *et al.* (2001).

Based on the research conducted by Ozer (2010) and Wagner *et al.* (1984) it was asked “Number of years you have been occupying the current position in this firm?” (Question A9), with the purpose of assessing the CEO tenure in the firm. Then, to know about the CEO functional background (Question A10), CEOs were asked to indicate “the functional

area, in which you have acquired more experience before becoming CEO/General Manager/Director/Managing Partner/Manager... of the company”.

Concerned with the moderating role of the variables related to firm ownership, and based on previous research by Buyl *et al.* (2011), CEOs were asked if they were a founder member of the firm (Question A11), if they considered the company’s capital dispersed or not (Question A12) using a seven-point Likert scale revealing how well the statement described their opinion (1 = Little; 7 = A lot), if they had any participation in the firm social capital (Question A13), and if so, how big was the share of the firm social capital (Question A14).

Big 5 Factor	A15.1	É original, tem ideias novas.	Is original, comes up with new ideas.
	A15.2	Valoriza experiências artísticas.	Values artistic experiences.
	A15.3	Tem uma imaginação ativa.	Has an active imagination.
	A15.4	Faz um trabalho minucioso.	Does a thorough job.
	A15.5	Faz coisas eficaz e eficientemente.	Does things effectively and efficiently.
	A15.6	Tem tendência para ser preguiçoso.	Tends to be lazy.
	A15.7	É comunicativo, falador.	Is communicative, talkative.
	A15.8	É extrovertido, sociável.	Is outgoing, sociable.
	A15.9	É reservado.	Is reserved.
	A15.10	Tem facilidade em perdoar.	Has a forgiving nature.
	A15.11	É atencioso e amável para os outros.	Is considerate and kind to others.
	A15.12	Por vezes, é um pouco rude para com os outros.	Is sometimes somewhat rude to others.
	A15.13	Preocupa-se bastante.	Worries a lot.
	A15.14	Fica nervoso facilmente.	Gets nervous easily.
	A15.15	É relaxado, lida bem com o stress.	Is relaxed, handles stress well.

Table 4 - Big Five Factor Questions

The effects of CEOs' psychological characteristics were analyzed using the Big Five Factor Model (McCrae & Costa, 1987). This tool was chosen based on the findings that it provides a comprehensive way of identifying differences in CEOs' personalities, besides being of common use by psychologists to assess differences in terms of individuals' psychological variables. In the management field, this model was used for example, by Peterson *et al.* (2003) to study the impact of CEO personality on the dynamic of the top management team, and in what way CEO leadership influences organizational performance. Nadkarni and Herrmann (2010) have also used this framework to examine the relationship between CEO personality, firm strategic flexibility (measured as the ability to quickly adapt to changing environments), and organizational performance. Abatecola *et al.* (2013) were other management researchers who have adopted the Big Five Factor to highlight the effects of CEO personality on strategic decisions, and firm performance. This, just to mention a few.

Each factor of the model is a construct that comprehends a set of psychological traits (Nadkarni & Herrmann, 2010) and the respondent is supposed to score each statement of the scale on a seven-point Likert scale revealing agreement or disagreement (1 = Strongly Disagree and 7 = Strongly Agree) with how well the statement described their situation (Question A15). The first three statements (see Table 4) refer to the factor *Openness to experience*, which shows in what way the CEO is creative, imaginative and thoughtful. The next three statements are concerned with *Conscientiousness*, in what way the individual is careful, hard-working and responsible. *Extraversion* is revealed by the answers given to the following three questions, and it is associated to the ability of being sociable, talkative, active and assertive. *Agreeableness*, or the tendency of being flexible, trusting, cooperative and good-natured, is presented in the next three statements. The last three statements refer to the fifth factor, *Emotional stability*, usually related to be calm, emotionally stable and with low levels of anxiety.

The Big Five Personality Dimensions are used to assess the effects of CEO personality in creating or influencing the organization, namely the culture of the organization.

After assessing the effect of CEO personality variables, research focused in measuring the existence of the individual social capital either in the organization, and in creating cooperation networks.

Bonding Social Capital	A16.1	Quanto amigos tem?	How many friends do you have?
	A16.2	Quanto colegas/companheiros de escola tem?	How many colleagues do you have?
	A16.3	De todos os seus colegas, em quantos pode confiar?	Of all your colleagues, how many can you trust?
	A16.4	De todos os seus familiares, em quantos pode confiar?	Of all your relatives, how many can you trust?
	A16.5	De todos os seus familiares, vizinhos, amigos, colegas de trabalho, ex-colegas de escola, quantos têm ligações entre si?	Of all your family members, neighbors, friends, co-workers, former classmates, how many have connections with others?
	A16.6	De todos os seus familiares, vizinhos, amigos, colegas de trabalho, ex-colegas de escola, quantos têm uma profissão?	Of all your family members, neighbors, friends, co-workers, former classmates, how many have a profession?
	A16.7	De todos os seus colegas, quantos o iriam ajudar, caso solicitasse ajuda?	Of all your colleagues, how many would help you if you asked for help?
	A16.8	De todos os seus amigos, quantos o iriam ajudar, caso solicitasse ajuda?	Of all your friends, how many would help you if you asked for help?
Bridging Social Capital	A17.1	Quantas organizações/grupos culturais, recreativos e de lazer existem na sua comunidade?	How many cultural, recreational and leisure groups/organizations exist in your community?
	A17.2	Quantas organizações/grupos governamentais, políticos, económicos e sociais existem na sua comunidade?	How many governmental, political, economic and social groups/organizations exist in your community?
	A17.3	Quanto desses grupos e organizações possuem amplas ligações sociais?	How many of these groups and organizations possess broad social connections?
	A17.4	Quanto desses grupos e organizações possuem grande influência social?	How many of these groups and organizations possess great social influence?
	A17.5	Quanto desses grupos/organizações culturais, recreativas e de lazer representam os seus interesses?	How many of these cultural, recreational and leisure groups/organizations represent your interests?
	A17.6	Quanto desses grupos/organizações governamentais, políticas, económicas e sociais representam os seus interesses?	How many of the governmental, political, economic and social groups/organizations represent your interests?
	A17.7	Quanto desses grupos/organizações governamentais, políticas, económicas e sociais o ajudariam caso solicitasse ajuda?	How many of the governmental, political, economic and social groups/organizations will help you upon your request?
	A17.8	Quanto desses grupos/organizações culturais, recreativas e de lazer o ajudariam caso solicitasse ajuda?	How many of the cultural, recreational and leisure groups/organizations will help you upon your request?

Table 5 - Personal Social Capital Scale Questions

Although there is some lack of consensus regarding how social capital should be measured (Salisu and Hashim 2017), during this research, the individual social capital was measured using the Personal Social Capital Scale (PSCS), an instrument empirically tested and validated in the US, and in China (Archuleta & Miller, 2011). Wang *et al.* (2014) tested two shorter versions of the PSCS in China, with the purpose of making these shorter versions reliable and valid when used in large scale surveys. Again, it was used a seven-point Likert scale revealing agreement or disagreement (1 = Strongly Disagree; 7 = Strongly Agree) with how well the statement described their situation regarding both bonding (Question A16) and bridging social capital (Question A17). In both cases, the

scale used was adapted from the one used by Wang *et al.* (2014) in their research (see Table 5).

Competing Values Framework	B10.1	A minha empresa é muito dinâmica e empreendedora. As pessoas estão dispostas a arriscar e a assumir riscos.	My facility is a very dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.
	B10.2	A minha empresa é um lugar muito formal e estruturado. Os procedimentos burocráticos geralmente determinam o que as pessoas fazem.	My facility is a very formalized and structured place. Bureaucratic procedures generally govern what people do.
	B10.3	Os gestores da minha empresa são acolhedores e preocupados. Eles preocupam-se em desenvolver o potencial dos trabalhadores e actuam como guias ou mentores.	Managers in my facility are warm and caring. They seek to develop employees' full potential and act as their mentors or guides.
	B10.4	Os gestores da minha empresa são propensos a assumir riscos. Eles encorajam os trabalhadores a assumir riscos e a ser inovadores.	Managers in my facility are risk-takers. They encourage employees to take risks and be innovative.
	B10.5	Os gestores da minha empresa são cumpridores de regras. Eles esperam que os trabalhadores sigam as regras, as políticas e os procedimentos estabelecidos.	Managers in my facility are rule-enforcers. They expect employees to follow established rules, policies, and procedures.
	B10.6	Os gestores da minha empresa são coordenadores e orientadores. Eles ajudam os trabalhadores a alcançarem as metas e os objetivos da organização.	Managers in my facility are coordinators and coaches. They help employees meet the facility's goals and objectives.
	B10.7	A lealdade e a tradição são o efeito aglutinador na minha empresa. O grau de compromisso para com a empresa é elevado.	The glue that holds my facility together is loyalty and tradition. Commitment to this facility runs high.
	B10.8	O compromisso e o desenvolvimento são os elementos aglutinadores da minha empresa. Há ênfase em ser o primeiro.	The glue that holds my facility together is commitment to innovation and development. There is an emphasis on being first.
	B10.9	As regras e as políticas formais são o elemento aglutinador na minha empresa. Os indivíduos sentem que é importante seguir as regras.	The glue that holds my facility together is formal rules and policies. People feel that following the rules is important.
	B10.10	O foco nas tarefas e no alcance de objetivos são o elemento aglutinador da minha empresa. A orientação para a produção é partilhada por todos.	The glue that holds my facility together is the emphasis on tasks and goal accomplishment. A production orientation is commonly shared.
	B10.11	A minha empresa foca-se no crescimento e na aquisição de novos recursos. A prontidão para abraçar novos desafios é importante.	My facility emphasizes human resources. High cohesion and morale in the organization are important.
	B10.12	A minha empresa foca-se nos recursos humanos. O moral e a elevada coesão na organização são importantes.	My facility emphasizes growth and acquiring new resources. Readiness to meet new challenges is important.
	B10.13	A minha empresa foca-se na permanência e na estabilidade. Manter as coisas é importante.	My facility emphasizes permanence and stability. Keeping things the same is important.
	B10.14	A minha empresa foca-se em ações competitivas e na concretização. É importante a existência de metas mensuráveis.	My facility emphasizes competitive actions and achievement. Measurable goals are important.

Table 6 - Competing Values Framework Questions

After collecting data concerning the CEO characteristics, the questionnaire focuses in collecting data on the organization and started by asking what the company corporate form in legal terms was (Question B1) and the respondent had to choose one of the available options. Then, it was asked the number of employees (Question B2) and the Business Volume of the last fiscal year (Question B3), following the European Commission Recommendation 2003/361 of 6th May, to gauge firm size, a moderating variable.

The next question (B4) related to the identification of the sector to which the firm belongs, and the respondent had to choose among the three available options: Food, Beverage and Tobacco Industry, Accommodation Activities Industry and Other. These designations were set according the Statistical Classification of Economic Activities in the European Community, Rev.2 (2008). The option “Other” was included, just to be sure that in the final sample, there were only firms belonging to these two sectors. This option allowed the removal of firms that might be wrongly classified in the SABI database.

Respondents were also asked if the firm belonged to or was part of a group (Question B5), and if they considered the company a family business (Question B6). These questions were aimed at evaluating the effect of these moderating variables in the conceptual framework.

Regarding the Top Management Team, it was asked “How many members are there in the Top Management Team?” to determine the TMT size (Question B7). Further, it was also asked if there were any family members in the firm management (Question B8), and in case the answer was affirmative, then it was asked “how many” (Question B9); if it was negative, then the respondent would proceed with the questionnaire.

The assessment of the type of organizational culture was done using the Competing Values Framework (CVF), initially developed by Quinn and Rohrbaugh (1983), but the CVF has been adapted through the years. Although this framework was most applied to healthcare companies through the years, and Kalliath *et al.* (1999) validated the CVF in a healthcare firm, nowadays this scale has been used in companies of different industries (see Table 6). For instance, Dastmalchian *et al.* (2000) used the CVF in firms from six different industries in Canada and South Korea. The respondent had to score each statement on a seven-point Likert scale revealing agreement or disagreement (1 =

Strongly Disagree; 7 = Strongly Agree) with how well the statement described their situation (Question B10). The first, the fourth, the eighth and the twelfth statement, enabled the researcher to see if the organizational culture was closer to an “Entrepreneurial culture”. The second, the fifth, the ninth and the thirteenth statement allowed the researcher to check if the organizational culture was more proxy of a “Hierarchical culture”. The third, the seventh, the eleventh reveal if the firm organizational culture was more similar to a “Team Culture”. The remaining statements show if organizational culture is closer to a “Rational culture”.

The next question was related to the analysis of the eventual existence of silo effect in the organization (Question B11). Therefore, the first nine statements were formulated by the researcher, but inspired by existing literature (Cilliers & Greyvenstein, 2012; Stone, 2004) and were named after “Silos”. The last seven statements were translated and adapted from the scale used by Lee *et al.* (2013) to measure and compare organizations’ resilience, as silo effect can influence organizational resilience. From these seven statements, the first four were called “Lack of Silo Mentality”, since these four statements are focused in finding if there are any working barriers intra and inter organizations, if there is a spirit of team work and if people is encouraged or not to play different roles within the organization, being therefore related to the existence or not, of silo mentality. The remaining three were denominated of “Communications & Relationships”, as in the original work of Lee *et al.* (2013), and because they are related to the way firms are seen within the industry, how firms establish and develop relationships with their stakeholders (customers and providers) and how employees work to have their job done regardless any boundaries that might exist among functional areas or organizations. Therefore, this construct “Communications & Relationships” assesses the firm informal relationships, not only internally but also externally when evaluating the health of the relationships with the firm stakeholders. So, the existence of organizational silo effect is assessed by three constructs: “Silos”, “Lack of Silo Mentality” and “Communications and Relationships”. Again, the respondent had to score each statement on a seven-point Likert scale revealing agreement or disagreement (1 = Strongly Disagree; 7 = Strongly Agree) with how well the statement described their opinion (see Table 7).

Silo effect	B11.1	Existem medidas que incentivam a partilha de informação entre departamentos.	There are measures that encourage the sharing of information between departments.
	B11.2	Cada departamento/secção funciona de forma autónoma.	Each department works autonomously.
	B11.3	Os departamentos/secções são interdependentes.	Departments are interdependent.
	B11.4	É frequente existirem actividades extra-laborais conjuntas.	Often there are joint activities after work.
	B11.5	As tarefas estão adequadamente definidas e atribuídas.	Tasks are adequately defined and attributed.
	B11.6	As responsabilidades estão devidamente definidas.	Responsibilities are well defined.
	B11.7	Cada departamento/secção tem a sua própria cultura.	Each department has its own culture.
	B11.8	Existem recompensas financeiras pelos resultados do departamento/secção.	There are financial rewards by departmental results.
	B11.9	Existem recompensas financeiras pelos resultados da organização.	There are financial rewards by organizational results.
	B11.10	As pessoas são encorajadas a circular entre diferentes departamentos ou a desempenhar diferentes funções no seio da organização, para ganhar experiência.	People are encouraged to move between different departments or try different roles within our organization to gain experience.
	B11.11	Existe um excelente espírito de equipa e de camaradagem na nossa organização.	There is an excellent sense of teamwork and camaraderie in our organization.
	B11.12	É importante que não existam barreiras que nos impeçam de trabalhar bem uns com os outros.	In our organization, it is important that there are no barriers which stop us from working well with each other.
	B11.13	É importante que não existam barreiras que nos impeçam de trabalhar bem com outras organizações.	In our organization, it is important that there are no barriers which stop us from working well with other organizations.
	B11.14	A organização é vista como sendo uma participante ativa na indústria e nos grupos setoriais.	Our organization is regarded as an active participant in industry and sector groups.
	B11.15	As pessoas trabalham com quem quer que seja necessário para terem o trabalho bem feito, independentemente das fronteiras entre departamentos ou organizações.	People in our organization work with who ever they need to work with to get the job done well, regardless of departmental or organizational boundaries.
	B11.16	A relação que temos com os fornecedores e clientes ajudar-nos-ia a recuperar rapidamente, caso a organização estivesse impossibilitada de trabalhar durante 3 meses.	If our organization was unable to operate for 3 months, the relationship we have with our suppliers and customers would help us to recover rapidly.

Table 7 - Silo effect questions

The questions concerning formal cooperation networks were all formulated by the researcher but were based on existing literature on the subject (Brandenburger & Nalebuff, 2011; Ritter *et al.*, 2004; Wilkinson & Young, 2002; Yoffie & Kwak, 2006).

First the respondent was asked if they had a formal/informal alliance with a complementor or a competitor, or with a customer/supplier, or with a R&D Center/Laboratory/University, and if the answer was affirmative then the respondent was asked to score on a seven-point Likert scale revealing how important (1 = Not important; 7 = Extremely important) the alliance was in terms of strategy, resources access, market access or knowledge transfer.

The scales used to measure the Big Five Framework and the Competing Values Framework before being included in the questionnaire were translated from the English language into Portuguese, just like all the other scales used. A retroversion was also made to ensure the quality of the translation.

A table was built with the question numbers in row, and the dimensions of scales in line, and using different colors, it was made the due correspondence (c.f. Appendix B).

4.4 DATA COLLECTION

After testing and validating the questionnaire at an early stage of data collection, the questionnaire was sent by email, with an introductory message and a link to the webpage with the online questionnaire, to a database containing contact info, mainly email address and telephone number of 5,556 active firms from the Accommodation Activities Sector, and from the Food, Beverage and Tobacco Industry. The questionnaire was available online from the 2nd of May 2018 to 3rd of July, being the contacts of the database sent a reminder message on a weekly basis. On the 3rd July, there were 185 questionnaires completed, and it was decided to start the analysis of the data collected.

4.5 STRUCTURAL EQUATION MODEL (SEM)

After data collection, it is expected to have a framework of analysis to be tested in the confirmatory stage. Therefore, it was decided to use the Structural Equation Model (SEM), which consists on a collection of statistical techniques that allow the analysis of

a number of associations between one or more, continuous or discrete independent variables, and one or more continuous or discrete dependent variables (Ullman & Bentler, 2012). This approach allowed to determine if the theoretical model previously obtained could be confirmed or not, if the linear relationships among the variables of the model were real, or not. In fact, one great advantage of this confirmatory method abides in the possibility of allowing the researcher to assess and change the theoretical model, in case it is necessary, offering a “great potential for furthering theory development” (Anderson & Gerbing, 1988, p. 411).

A model usually includes both measured variables and latent variables, which are “hypothetical constructs that cannot be directly measured”; however, those constructs can be represented by several measurable variables, which are indicators of the construct (MacCallum & Austin, 2000). SEM allows multiple measures (indicators) to be associated with a single latent construct. This means that latent variables are indirectly measured, by observable indicators obtained through questionnaires, tests or other data collection methods (Kline, 2015).

First, the model to be measured was designed, which consisted on diverse relationships among the constructs, and their indicators. Some variables like Age, Education, Management Diversity and Management Tenure were defined as observable variables, while the others were considered latent variables, as these variables can only be indirectly measured, by their indicators, which are in turn their observable manifestations. The ability of these indicators to reflect their correspondent construct is determined by the size of the loadings (Chin, 1998).

It can be said that each latent variable is influenced by its block of indicators, and that the latent variable component scores are based on the weighted sum of the indicators, and each block of indicators depends on the model being estimated. Those relations among the variables were designed taking into account the literature review done previously, so this was a confirmatory structural model which “specifies the causal relations of the constructs to one another, as posited by some theory” (Anderson & Gerbing, 1988, p. 411).

The advantages of using SEM are the possibility of using both types of variables (latent and manifest); SEM also offers no default model and places few limitations on what types

of relations can be found among variables. It only requires researchers to support the hypothesis with theory or research. The edition of these categories was made using scales already tested by other researchers, but when it was not possible, scales were developed with the support of the available theory.

SEM also allows the use of complex models that combine latent variables, reflexive/formative variables, effects of mediating variables, and “multiple group comparisons of these complex relationships”. SEM enables the researcher to estimate the simultaneous causal networks, and the effects across multiple groups (Lowry & Gaskin, 2014, p. 123). These two functionalities are a plus in this research.

SEM’s parameters could be estimated following two different techniques: Covariance Structure Models (CSM) and Partial Least Square (PLS). The first category focuses in determining variable covariances, while the PLS concentrates in error minimization. These two differ in the estimation algorithm, the type of models that can be estimated, the type of indicators allowed and the statistical tests. CMS estimates the covariances of all observed variables while PLS follows an iterative sequence of generalized least squares, analyzing each latent variable at a time, and by using multiple linear regressions to the estimates of the latent variables, it minimizes the residual variance of all dependent variables (Marôco, 2010).

The CSM approach aims at minimizing the difference between the sample covariances and those predicted by the theoretical model, thus the parameter estimation process tries to reproduce the covariance matrix of the observed measures (Chin, 1998).

A PLS model presents a structural part, evidencing the relationships among the latent variables, a measurement element, which exposes how the latent variables and their indicators are related, and the weight relations, which are used to estimate case values for latent variables (Chin, 1998).

While CSM first estimates the model parameters and then case values, by regressing them onto a set of indicators, PLS first estimates case values, treating these estimates as perfect substitutes for the latent variables. And, the weights are estimated, so as to allow the resulting case values to capture most of the variance of the independent variables (Haenlein & Kaplan, 2004).

It was decided to use the Partial Least Square (PLS) technique which allows not only to have theory confirmation, but also to suggest if certain relationships do exist or not, and to suggest propositions to be tested later on (Chin, 1998). Other reason to use the Partial Least Squares abides in the existence of two types of variables in the model: reflective and formative, and CSM technique only allows relationships between reflective variables, while PLS allows between both reflective and formative (Marôco, 2010).

PLS has two more main advantages when compared to the factor-based covariance-fitting approach of SEM: it avoids “factor indeterminacy” and the existence of “inadmissible solutions” (Chin, 1998, p. 295). Statistical inference is obtained by applying *bootstrapping*.

In this case, it was decided to use SmartPLS3, an open source software, to determine if the model could be confirmed or not. SmartPLS3 was used because it allowed the use of PLS technique, besides being very easy and intuitive.

The model was estimated following three steps: firstly, there was the validation of the measurement model using first a Confirmatory Factor Analysis, followed by an Exploratory Factor Analysis, when the first one had not validated the scale; secondly there was the estimation of the structural model, and thirdly it became the multi-group analysis.

4.5.1 Validation of the Measurement Model

A factorial analysis consists in a general linear modeling technique that allows the researcher to identify and describe the structure and the relations between latent and observable variables in a certain analysis (Marôco, 2010). There are essentially two types of factor analysis: Exploratory and Confirmatory.

A confirmatory factor analysis is a technique that aims to confirm the number of factors and the results of the observed variables confirm the theory expectations (Malhotra, 2007). As the scales used had already been validated in previous contexts, a confirmatory factorial analysis was carried out at the beginning to test the validity of the scales used in the context of this study. Whenever the scales were not validated, an exploratory factorial analysis was performed.

The exploratory factor analysis aims to find and analyze the structure of a group of interrelated variables to build a measurement scale for factors that represent the original variables of the model. Therefore, it is the factor weights, derived from statistical results, that show the relative importance of the factor on each observable variable. The exploratory factor analysis includes a Principal Component Analysis (PCA) with the aim of reducing a number of correlated variables into a smaller group of independent variables, called principal components (Marôco, 2010), that maintain the information contained in the original variables. The VARIMAX rotation was also used with the aim of obtaining one, and only one of the original variables which is strongly related to a single factor, and residually related to other, thus allowing a better interpretation (Marôco, 2010).

To verify the adequacy of the sample and factor analysis, and to define the number of components to be used. It is necessary to use the Kaiser-Meyer-Olkin (KMO) and the Bartlett Sphericity Test to determine if there are correlations among the variables. The sample adequacy is validated if KMO presents values between 0.5 and 1 (Malhotra, 2007). The closest to 1, is the KMO value, the more suitable is the factor analysis. The aim of the Bartlett Sphericity Test is to check the presence of variance among the variables and therefore support the research hypothesis if variables are uncorrelated (Malhotra, 2007). The Bartlett test is a test of significance, where the null hypothesis is rejected, once the Chi-square is greater than 1.96, and p-value is close to zero, confirming the adequacy of the factorial model in the data analysis.

All the scales were validated, and to have this validation it is required to assess the reliability and the internal consistency of the scale, and the most used method is the Cronbach's Alpha. The value of the Cronbach's Alpha ranges from 0 to 1, being the value of 0.60 considered the lower limit of acceptability (Hair, 2010). However, there are other options like the Composite Reliability (CR), which measures both reliability and internal consistency of measured variables representing latent constructs, or the Average Variance Extracted (AVE), which measures the consistency showing the average percentage of explained variance between the factors of a construct. Hair *et al.* (2016) argue that once Cronbach's Alpha presents some limitations, it is advisable to use different reliability measures such as Composite Reliability and Average Variance Extracted (AVE). The convergence validity happens when the value of CR is greater than the value of AVE, and

AVE value is greater than 0.5, the minimum acceptable value for AVE (Marôco, 2010). Therefore, the value of the Composite Reliability should not be lower than 0.7 (Maroco & Garcia-Marques, 2006). While Composite Reliability is a measure of internal consistency being only applicable to latent variables with reflective indicators, the Average Variance Extracted measures the amount of variance captured by the latent variable component from its indicators (Chin, 1998).

4.5.2 Structural Model Regression

A structural model represents the theory and shows how the constructs relate to each other. It usually tests the proposed casual relationships, which will be done in this study. Structural paths are drawn between the constructs representing a hypothesized structural relationship between the constructs, highlighting the cause and effect relationships among a set of dependent and independent variables.

SEM not only assesses the structural model, but also the measurement model, with the loadings of the observed measurements on the expected latent variables. The analysis of both measurement and structural model allows the measurement errors of the observed variables and a factor analysis combined with the hypothesis testing in one operation (Gefen, 2000).

SEM was also used for assessing variable mediation as it allows not only to control error measurement, but also to have alternative ways to explore the mediation effect. There is a mediation effect when there is only one intervening variable doing an indirect effect (Preacher & Hayes, 2004). Therefore, a Sobel test was carried out to assess the mediation effect of some variables under analysis, and the null hypothesis is rejected if the critical value for the two-tailed version is ± 1.96 , for a significance level of 0.05, assuming that sampling distribution is normal.

4.5.3 Multi-group Analysis

A multi-group analysis allows to test if there are significant differences in pre-defined data groups, regarding a group-specific estimate. This analysis is based on the PLS-SEM bootstrapping results from each group. A result is significant at a 5% probability of error level, if the p-value is smaller than 0.05 or larger than 0.95 for a certain difference of group specific path coefficients (Sarstedt *et al.*, 2011).

A multi-group analysis using partial PLS-SEM, testing each structural relationship at a time, is an effective way of assessing the effect of moderator variables across multiple relationships.

When a multi-group analysis is used, it enables the researcher to identify differences in the subsamples, which are not evident when examining the sample as a whole. Therefore, running a multi-group analysis increases the probability of finding significant differences in certain relationships across the results of the groups.

4.6 SUMMARY

This chapter focused in describing and explaining how the questionnaire was built, the reasons why the questionnaire was sent to CEOs of two sectors, one with an increasing rate of growth, the Accommodation industry, and the other with a steady growth rate, the Food, Beverage and Tobacco sector.

It is also described all the methodological options and decisions made during data collection and analysis. Although all the methodological options were not exhaustively described and explained, they will hopefully contribute to a better understanding and interpretation of the results in the following chapter.

RESULTS

5 RESULTS

In the present chapter, there is a description of data analysis and of the results. Firstly, the data collection method and the characteristics of the respondents to the questionnaire shall be addressed. Secondly, a description of the process of measurement model validation, to check the constructs' validity and reliability, and of the structural model regression, to estimate the statistical significance of the relationships will be presented. Lastly, a multi-group analysis shall also be done, to possibly identify if there are statistically significant differences among the groups. The groups were obtained considering the industry, the size of the firm and the existence of a TMT in the firm.

5.1 DESCRIPTIVE ANALYSIS

From a sample with 5,556 active firms of the Accommodation Activities sector, and from the Food, Beverage and Tobacco Industry, 185 completed questionnaires were returned, in total. 210 were started but not completed and 139 were not received by the person in charge of the firm's fate.

When analyzing the demographic profile of the respondents, it is possible to say there were 70.3% of males and 29.7% of females. According to the Eurostat, the percentage of women in management position is 33%, although in this case it was the CEO, and probably the number is smaller, but this number is aligned with the Portuguese context. The CEO average age was 48 years old, and only 41.6% had formal education in management. However, 63.8% had a degree, and 21.1% finished secondary school.

From all the respondents, about 53% were the firm founder and 68.1% had some sort of participation in the social capital of the firm.

As far as firms are concerned some characteristics should be highlighted. The questionnaire was sent only to firms belonging to the Accommodation sector, and to the Food, Beverage and Tobacco Industries, and 50.3% answers were from the Accommodation sector, and 49.7% of the answers were from the Food, Beverage and

Tobacco Industries. This distribution is slightly different from the population, since from the total of 5994 firms, 36,7% (2198) were from the Food, Beverage and Tobacco industries while 63,3% (3796) were from the Accommodation sector.

When looking at the Top Management Team, firms had in average 3 members in their management team. And, 75.1% of the respondents were from family firms.

From all the firms that answered the questionnaire, 28 were managed by a single person, that is, the CEO himself, and 157 were managed by a Top Management Team, whose composition ranged from 2 up to 20 members.

In terms of firm size, it was considered as criteria of assessment, the number of employees and the business volume, as per the 2003 European Commission recommendation dated of 3rd May, to assess the size of small medium businesses, once in the EU there are about 23 million of small medium businesses, which are about 99% of the number of total firms.

From all the questionnaires returned, 45.9% were from firms with less than 10 employees, 39.5% of the firms had between 10 and 50 employees, 14.1% had more than 50 and less than 250 employees, and 0.5% had more than 250 employees (see *Figure 4*).

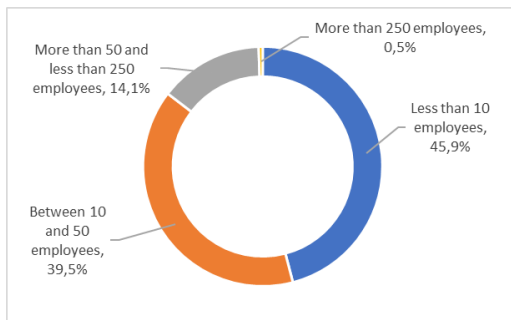


Figure 4 - Size: Number of Employees

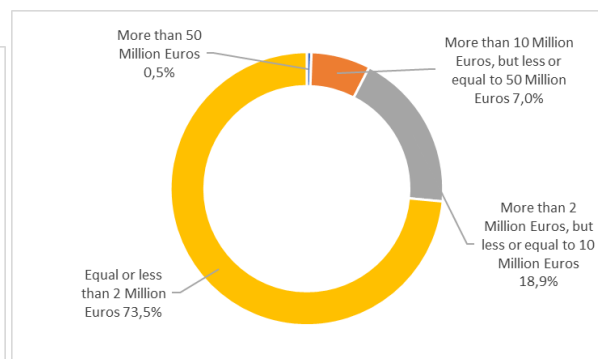


Figure 5 - Size: Business Volume

Additionally, 73.5 of all the firms had a business volume equal to or less than 2 million euros, 18.9% had more than 2 million euros, but less than 10 million euros. Only 0.5% of the firms had a business volume of more than 50 million euros, and 7% had more than 10 million euros, but less or equal to 50 million euros (see *Figure 5*).

When asked about having cooperation networks with complementor firms, 47% answered positively. However, only 31.4% of firms declared having a cooperation network with a competitor, and 51.9% firms claimed to have a cooperation network with a customer or a supplier. Only 23.8% of firms stated to have a cooperation network with a Research Center, Laboratory or University.

From those who have declared to have a network with a complementor firm, almost 80% considered it very important in strategical terms, 69% considered it very important to have access to resources, 76% considered it very important to have access to markets and about 72% found it very important as a way of sharing knowledge (see Table 8).

	Strategy		Access to Resources		Access to Markets		Sharing Knowledge	
	Absolute Frequency	Relative Frequency (%)	Absolute Frequency	Relative Frequency (%)	Absolute Frequency	Relative Frequency (%)	Absolute Frequency	Relative Frequency (%)
1 - Not Important at all	2	2,30%	2	2,30%	4	4,60%	1	1,15%
2	0	0,00%	9	10,34%	5	5,75%	5	5,75%
3	7	8,05%	7	8,05%	5	5,75%	6	6,90%
4	9	10,34%	9	10,34%	7	8,05%	13	14,94%
5	16	18,39%	12	13,79%	14	16,09%	17	19,54%
6	31	35,63%	33	37,93%	29	33,33%	26	29,89%
7-Extremely Important	22	25,29%	15	17,24%	23	26,44%	19	21,84%
	87	100,00%	87	100,00%	87	100,00%	87	100,00%

Table 8 - Complementor Network Importance

Considering the 58 firms that have stated having a network with a competitor, about 67% considered it very important in strategical terms, 62% considered it crucial to have access to resources, nearly 75% think the network is very important to have access to markets, and almost 69% reckon the competitor network is very important to sharing knowledge (see Table 9).

	Strategy		Access to Resources		Access to Markets		Sharing Knowledge	
	Absolute Frequency	Relative Frequency (%)	Absolute Frequency	Relative Frequency (%)	Absolute Frequency	Relative Frequency (%)	Absolute Frequency	Relative Frequency (%)
1 - Not Important at all	0	0,00%	4	6,90%	2	3,45%	2	3,45%
2	1	1,72%	4	6,90%	3	5,17%	3	5,17%
3	6	10,34%	6	10,34%	4	6,90%	8	13,79%
4	12	20,69%	8	13,79%	6	10,34%	5	8,62%
5	11	18,97%	13	22,41%	13	22,41%	13	22,41%
6	18	31,03%	14	24,14%	16	27,59%	14	24,14%
7-Extremely Important	10	17,24%	9	15,52%	14	24,14%	13	22,41%
	58	100,00 %	58	100,00 %	58	100,00 %	58	100,00 %

Table 9 - Competitor Network Importance

	Strategy		Access to Resources		Access to Markets		Sharing Knowledge	
	Absolute Frequency	Relative Frequency (%)	Absolute Frequency	Relative Frequency (%)	Absolute Frequency	Relative Frequency (%)	Absolute Frequency	Relative Frequency (%)
1 - Not Important at all	2	2,08%	5	5,21%	6	6,25%	6	6,25%
2	3	3,13%	4	4,17%	4	4,17%	3	3,13%
3	6	6,25%	8	8,33%	7	7,29%	7	7,29%
4	11	11,46%	6	6,25%	11	11,46%	9	9,38%
5	19	19,79%	19	19,79%	19	19,79%	24	25,00%
6	31	32,29%	29	30,21%	24	25,00%	25	26,04%
7 - Extremely Important	24	25,00%	25	26,04%	25	26,04%	22	22,92%
	96	100,00 %	96	100,00 %	96	100,00 %	96	100,00 %

Table 10 - Customer/Provider Network Importance

More than 50% of the firms which have answered to the questionnaire have a network with a customer or a provider, and 77% of these found it very important in strategy terms, 76% think the same, but in terms of access to resources, 70% in terms of access to markets, and 74% considered it important in terms of sharing information (see *Table 10*). Only 44 of the 185 respondent firms have declared to have a network with a Research Center/Laboratory/ University.

	Strategy		Access to Resources		Access to Markets		Sharing Knowledge	
	Absolute Frequency	Relative Frequency (%)	Absolute Frequency	Relative Frequency (%)	Absolute Frequency	Relative Frequency (%)	Absolute Frequency	Relative Frequency (%)
1 - Not Important at all	5	11,36%	4	9,09%	6	13,64%	1	2,27%
2	1	2,27%	4	9,09%	4	9,09%	0	0,00%
3	1	2,27%	3	6,82%	6	13,64%	1	2,27%
4	2	4,55%	4	9,09%	6	13,64%	3	6,82%
5	7	15,91%	5	11,36%	5	11,36%	4	9,09%
6	15	34,09%	11	25,00%	7	15,91%	14	31,82%
7 - Extremely Important	13	29,55%	13	29,55%	10	22,73%	21	47,73%
	44	100,00%	44	100,00 %	44	100,00%	44	100,00 %

Table 11 - Research Center/Lab/University Network Importance

Nearly 85% of the firms with a network with a Research Center/Lab/University find it very important in terms of strategy, 66% considered it very important in terms of access to resources and 50% in terms of having access to markets, but almost 50% think the network is Extremely important in terms of knowledge sharing (see *Table 11*).

In general, it can be said that most of the firms that have a collaboration network consider it to be very important for the firm, be it for strategic reasons, for easy access to resources or markets, be it for knowledge sharing.

5.2 VALIDATION OF THE MEASUREMENT MODEL

The measurement model allows the researcher to have a confirmatory assessment of convergent validity and discriminant validity (Anderson & Gerbing, 1988).

Initially, a Confirmatory Factor Analysis was done to check if the scales used in other contexts were valid in this study context. In a Confirmatory Factor Analysis, the aim of the researcher is to assess the weight of each scale item and how well the scale measures the construct (Hair, 2010); this is called the reliability of the construct.

This procedure was only carried out for the reflexive scales, since it is not necessary to study the validity and reliability of the formative constructs (Wong, 2013).

The goodness of fit of the scales was verified using the PLS Algorithm, which revealed some problems with some constructs like Agreeableness, Bonding, Conscientiousness, Education, Emotional Stability, Extraversion and Silos, as it can be seen on *Table 12*.

The constructs Agreeableness, Conscientiousness, Education, Emotional Stability and Extraversion presented a very low value of the Cronbach's Alpha, which is a reliability measure ranging from 0 to 1, being the value of 0.60 considered the lower limit of acceptability (Hair, 2010).

Besides having a low value of the Cronbach's Alpha, the constructs referred also presented values for the Composite Reliability lower than 0.7 the recommended minimum acceptable value (Maroco & Garcia-Marques, 2006), showing little internal consistency of the variables.

Although the construct "Silos" presents a Cronbach's Alpha of 0.766, the AVE value is of 0.459, which is below 0.5, the minimum acceptable value (Chin, 1998), so little variance is captured by the latent variable from its indicators. The construct "Bonding" reveals the same problem.

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Agreeableness	-0,104	0,096	0,439
Bonding	0,820	0,865	0,431
Bridging	0,892	0,912	0,566
Communications and Relationships	0,772	0,867	0,686
Conscientiousness	0,174	0,601	0,517
Education	0,422	0,575	0,507
Emotional Stability	-0,306	0,335	0,331
Entrepreneurial Culture	0,830	0,887	0,663
Extraversion	0,115	0,693	0,651
Hierarchical Culture	0,715	0,814	0,538
Networks			
Openness to Experience	0,772	0,868	0,687
Rational Culture_	0,816	0,890	0,731
Silo Mentality	0,777	0,858	0,604
Silos	0,766	0,832	0,459
Team Culture	0,723	0,844	0,643

Table 12 - Construct Reliability and Validity Table

The constructs Agreeableness and Emotional Stability beyond the problems referred, also show an AVE value below the minimum acceptable value (0.5).

As the scales used to measure the constructs Agreeableness, Bonding, Conscientiousness, Education, Emotional stability, Extraversion and Silos presented some problems, it was decided to do an Exploratory Factorial Analysis of these constructs.

5.2.1 Big Five Framework

The scale which measures the construct Openness to Experience was validated by the Confirmatory Factor Analysis. However, the scales of the other constructs of the Big Five Framework: Extraversion, Agreeableness, Conscientiousness and Emotional Stability were not validated, therefore an Exploratory Factor Analysis was made.

	A15.4	Faz um trabalho minucioso.	Does a thorough job.
	A15.5	Faz coisas eficaz e eficientemente.	Does things effectively and efficiently.
	A15.6	Tem tendência para ser preguiçoso.	Tends to be lazy.
	A15.7	É comunicativo, falador.	Is communicative, talkative.
	A15.8	É extrovertido, sociável.	Is outgoing, sociable.
	A15.9	É reservado.	Is reserved.
	A15.10	Tem facilidade em perdoar.	Has a forgiving nature.
	A15.11	É atencioso e amável para os outros.	Is considerate and kind to others.
	A15.12	Por vezes, é um pouco rude para com os outros.	Is sometimes somewhat rude to others.
	A15.13	Preocupa-se bastante.	Worries a lot.
	A15.14	Fica nervoso facilmente.	Gets nervous easily.
	A15.15	É relaxado, lida bem com o stress.	Is relaxed, handles stress well.

Table 13 - Indicators of the variables Conscientiousness, Extraversion, Agreeableness and Emotional Stability

Question A15.6 (Conscientiousness) had to be reverted, and the same happened to questions 15.9 (Extraversion), 15.12 (Agreeableness) and 15.15 (Emotional Stability). This was done because of the apparent opposite meaning, when compared to the other indicators of the construct considered (*Table 13*).

In *Table 14*, the Correlation Matrix of the 12 indicators of the variables can be found (with variables A15.6, A15.9, A15.12 and A15.15 reverted).

		A15.4	A15.5	A15.6Rev	A15.7	A15.8	A15.10	A15.11	A15.13	A15.14	A15.9Rev	A15.12Rev	A15.15Rev
Correlation	A15.4	1,000	,498	,191	,149	,129	,017	,172	,245	-,152	-,020	,109	-,087
	A15.5	,498	1,000	,111	,267	,195	-,022	,187	,264	,025	-,025	-,021	,064
	A15.6Rev	,191	,111	1,000	-,014	,047	-,067	,086	,086	-,209	,237	,271	,054
	A15.7	,149	,267	-,014	1,000	,818	,035	,396	,320	,091	,319	,111	-,065
	A15.8	,129	,195	,047	,818	1,000	,067	,448	,243	,031	,373	,091	-,049
	A15.10	,017	-,022	-,067	,035	,067	1,000	,179	,066	,064	-,068	-,076	-,050
	A15.11	,172	,187	,086	,396	,448	,179	1,000	,408	-,055	,062	,351	-,160
	A15.13	,245	,264	,086	,320	,243	,066	,408	1,000	,252	-,056	,013	,080
	A15.14	-,152	,025	-,209	,091	,031	,064	-,055	,252	1,000	-,191	-,270	,426
	A15.9Rev	-,020	-,025	,237	,319	,373	-,068	,062	-,056	-,191	1,000	,298	-,053
	A15.12Rev	,109	-,021	,271	,111	,091	-,076	,351	,013	-,270	,298	1,000	-,115
	A15.15Rev	-,087	,064	,054	-,065	-,049	-,050	-,160	,080	,426	-,053	-,115	1,000

Table 14 - Correlation Matrix

The Kaiser-Meyer-Olkin criteria assesses whether the Factor Analysis is adequate or not, in this case, it presents a value of 0.6 (Table 15), which is an acceptable value. So, it can be said that the Factor Analysis Model may have an adequate fit to the sample. Still, the significance of the Bartlett's Test of Sphericity is zero, demonstrating the validity and suitability of the responses collected through the study.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,600
Bartlett's Test of Sphericity	Aprox. Chi-Square	585,485
	df	66
	Sig.	,000

Table 15 - KMO and Bartlett Test

The decision concerning the number of components that should be kept for further analysis is made using the eigenvalues criteria. All eigenvalues greater than 1, should be retained (Hair, 2010). Observing Table 16, and taking this criteria into consideration, it can be concluded that the first 5 components should be retained, since their eigenvalues are greater than 1, and those 5 factors account for 70.651% of the variance of the 12 variables, which is sufficient, in terms of total variance explained.

Total Variance Explained									
Factor	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	2,820	23,504	23,504	2,820	23,504	23,504	2,214	18,452	18,452
2	1,863	15,528	39,032	1,863	15,528	39,032	1,715	14,288	32,741
3	1,467	12,223	51,255	1,467	12,223	51,255	1,587	13,227	45,968
4	1,264	10,534	61,788	1,264	10,534	61,788	1,562	13,014	58,982
5	1,064	8,863	70,651	1,064	8,863	70,651	1,400	11,669	70,651
6	,881	7,345	77,996						
7	,677	5,645	83,641						
8	,546	4,550	88,191						
9	,464	3,866	92,057						
10	,446	3,716	95,774						
11	,353	2,938	98,712						
12	,155	1,288	100,000						

Table 16 - Eigenvalues Matrix

Once the Component Matrix does not maximize the loadings of each variable on one factor, the Orthogonal Rotation (VARIMAX) is applied to help with the interpretation (Table 17).

Rotated Component Matrix ^a					
	Component				
	1	2	3	4	5
A15.4		,829	,129	-,161	
A15.5	,163	,830			
A15.6Rev		,208	,760		-,116
A15.7	,899	,182			,137
A15.8	,909	,111			,137
A15.10		-,114	-,137		,666
A15.11	,382	,166	,294		,686
A15.13	,208	,402		,383	,501
A15.14			-,319	,784	,144
A15.9Rev	,580	-,193	,438	-,119	-,312
A15.12Rev	,114		,757	-,201	,170
A15.15Rev				,835	-,183

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization. ^a

a. Rotation converged in 6 iterations.

Table 17 - Rotated matrix

Component 1 aggregated A15.7, A15.8 and A15.9Rev, as seen in Table 18, the indicators of dimension Extraversion, whose loadings after rotation increased from 0.796 to 0.899 (A15.7), from 0.792 to 0.909 (A15.8) and from 0.401 to 0.580 (A15.9Rev), this meant

that the explanatory power of the variables increased due to a “more even distribution” (Hair, 2010, p. 136).

A15.7	É comunicativo, falador.	Is communicative, talkative.
A15.8	É extrovertido, sociável.	Is outgoing, sociable.
A15.9Rev	É reservado.	Is reserved.

Table 18 - Factors of dimension Extraversion

Component 2 aggregated A15.4 and A15.5, the variables of dimension Conscientiousness (*Table 19*), whose loadings after applying the VARIMAX technique increased up to 0.829 (A15.4) and up to 0.830 (A15.5).

A15.4	Faz um trabalho minucioso.	Does a thorough job.
A15.5	Faz coisas eficaz e eficientemente.	Does things effectively and efficiently.

Table 19 - Factors of dimension Conscientiousness

Component 3 contained A15.6Rev with a loading after rotation of 0.760 and A15.12Rev, with a loading of 0.757 after rotation, the first related to Conscientiousness and the second to Agreeableness (*Table 20*).

A15.6Rev.	Tem tendência para ser preguiçoso.	Tends to be lazy.
A15.12Rev.	Por vezes, é um pouco rude para com os outros.	Is sometimes somewhat rude to others.

Table 20 - Factors related to Conscientiousness & Agreeableness

Component 4 included A15.14 with a loading after rotation of 0.784 and A15.15Rev, with a loading of 0.835. Both variables referred to Emotional Stability of the Big Five Framework (*Table 21*).

A15.14	Fica nervoso facilmente.	Gets nervous easily.
A15.15Rev.	É relaxado, lida bem com o stress.	Is relaxed, handles stress well.

Table 21 - Factors related to Emotional Stability

Although components 2, 3 and 4 included only two items, given its theoretical importance, it was decided to keep those components.

As the loadings of the variables of Components 1, 2, 3 and 4 are greater than 0.70, then it can be stated that more than one half of the variance is accounted by the loading on a single factor (Hair, 2010, p. 136).

A15.10	Tem facilidade em perdoar.	Has a forgiving nature.
A15.11	É atencioso e amável para os outros.	Is considerate and kind to others.
A15.13	Preocupa-se bastante.	Worries a lot.

Table 22 - Factors related to Agreeableness

At last, component 5 comprehended A15.10 with a loading after rotation of 0.666, A15.11 with a loading of 0.686, and A15.13 with a loading of 0.501. The first two variables are related to the construct Agreeableness, and the last one is referred to Emotional Stability (*Table 22*).

Component 1 - Extraversion

Analysing the reliability of the scale Extraversion (Component 1), the value of the Cronbach Alpha was 0.729, Composite Reliability value was also greater than 0.7, and AVE value of 0.648, is greater than 0.5, so it can be said that Component 1 is consistent and reliable (see *Table 23*).

Component	Cronbach's Alpha	AVE	CR	
1	0.729	0.648	0.829	✓

Table 23 – Reliability measures of Component 1

Component 2 - Conscientiousness

Doing the same with scale Conscientiousness (Component 2), the value of Cronbach Alpha was 0.65, which is an acceptable value once it is above 0.6 (Maroco & Garcia-Marques, 2006). The values of the other two measures are also acceptable, so Component 2 can be included in the analysis (see *Table 24*).

Component	Cronbach's Alpha	AVE	CR	
2	0.65	0.749	0.856	✓

Table 24 – Reliability measures of Component 2

Component 3

Analysing the reliability of the scale of Component 3, it was decided to exclude this scale as the value of the Cronbach Alpha was 0.423, which can not be accepted as it is below 0.6 (see *Table 25*).

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of items
.423	.426	2

Table 25 - Alpha de Cronbach of Component 3

Component 4 – Emotional Stability/Neuroticism

Although the scale of Component 4, which measures Emotional Stability presented a Cronbach Alpha of 0.598, a value closer to 0.6, which is a highly criticized value, being accused of being very conservative. Therefore, looking at the other two measures Composite Reliability and Average Variance Extracted which presented values above the minimum values accepted, it was decided to retain this scale (see *Table 26*).

Component	Cronbach's Alpha	AVE	CR	
4	0.598	0.657	0.783	✓

Table 26 – Reliability measures of Component 4

Component 5 - Agreeableness

Component 5 presented a Cronbach Alpha of 0.404, a value well below the 0.6, so it was decided to exclude the factors used to measure Agreeableness (*Table 27*).

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,404	,455	3

Table 27 - Alpha de Cronbach of Component 5

In the model, the scales used to assess the Psychological variables of the CEO, meaning the Big Five Framework, turned out to be the Big Four instead of Big Five, since only the scales used to measure Extraversion, Openness to Experience, Conscientiousness and Emotional Stability/Neuroticism, have seen their reliability confirmed. The dimension Agreeableness was, therefore, excluded from the model (Table 28).

Dimension	Cronbach's Alpha	AVE	CR	
Extraversion	0,752	0,648	0,829	✓
Conscientiousness	0,665	0,749	0,856	✓
Emotional Stability	0,598	0,657	0,783	✓
Openness to Experience	0,772	0,686	0,868	✓
Agreeableness				×

Table 29 – Summarized results of the Dimensions

5.2.2 Social Capital

The Confirmatory Factor Analysis validated and confirmed the scale of Bridging, but the scale used to assess the construct Bonding was not validated. Therefore, the need to carry out an Exploratory Factor Analysis to the scale used to measure “Bonding Social Capital”.

Table 30 shows the existing correlation among the 9 indicators of the variables.

Correlation Matrix										
		A16.1	A16.2	A16.3	A16.4	A16.5	A16.6	A16.7_A	A16.7	A16.8
Correlation	A16.1	1,000	,599	,451	,474	,253	,450	,052	,470	,217
	A16.2	,599	1,000	,383	,384	,204	,518	,054	,390	,269
	A16.3	,451	,383	1,000	,664	,399	,313	,032	,485	,479
	A16.4	,474	,384	,664	1,000	,495	,364	-,052	,566	,326
	A16.5	,253	,204	,399	,495	1,000	,208	,080	,375	,306
	A16.6	,450	,518	,313	,364	,208	1,000	,155	,400	,238
	A16.7_A	,052	,054	,032	-,052	,080	,155	1,000	,163	,269
	A16.7	,470	,390	,485	,566	,375	,400	,163	1,000	,669
	A16.8	,217	,269	,479	,326	,306	,238	,269	,669	1,000

Table 30 - Bonding Correlation Matrix

In this case, the model presents an adjusted fit, since the Kaiser-Meyer-Olkin value is greater than 0.6, and as the significance of the Bartlett Test is zero revealing the validity and suitability of the responses collected through the research. (Table 31).

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,769
Bartlett's Test of Sphericity	Aprox. Chi-Square	624,935
	df	36
	Sig.	,000

Table 31 - KMO & Bartlett Test of Bonding Scale

All the variables presented communalities values' greater than 0.5, revealing that each variable showed more than 0.5 of variance. Observing Table 32, of the Total Explained Variance, it can be seen the reduction of 9 variables up to three components. The first three components presented loadings greater than 1, and their sum accounted for the explanation of 69.154% of the variance of the model.

Analyzing the Component Matrix (Table 32) it is possible to observe that Component 1 aggregates A16.3, A16.4, A16.5, indicators of "Trust", and A16.7 and A16.8, indicators of "Help". With a VARIMAX rotation, to improve the power of explanation of the variables (Hair, 2010) the loading of the variables became 0.753 (A16.3), 0.775 (A16.4),

0.721 (A16.5), 0.673 (A16.7) and 0.625 (A16.8). Therefore, this factor was named “Help & Trust” (see *Table 33*).

Total Variance Explained									
Component	Total	Initial Eigenvalues		Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
		% of Variance	% Cumulative	Total	% of Variance	% Cumulative	Total	% of Variance	% Cumulative
1	3,904	43,374	43,374	3,904	43,374	43,374	2,673	29,695	29,695
2	1,206	13,400	56,774	1,206	13,400	56,774	2,259	25,101	54,796
3	1,114	12,380	69,154	1,114	12,380	69,154	1,292	14,358	69,154
4	,733	8,143	77,297						
5	,564	6,263	83,560						
6	,513	5,700	89,260						
7	,445	4,947	94,207						
8	,331	3,682	97,889						
9	,190	2,111	100,000						

Extraction Method: Principal Component Analysis

Table 32 - Eigenvalues Matrix

A16.3	De todos os seus colegas, em quantos pode confiar?	Of all your colleagues, how many can you trust?
A16.4	De todos os seus familiares, em quantos pode confiar?	Of all your relatives, how many can you trust?
A16.5	De todos os seus familiares, vizinhos, amigos, colegas de trabalho, ex-colegas de escola, quantos têm ligações com outros?	Of all your family members, neighbors, friends, co-workers, former classmates, how many have connections with others?
A16.7	De todos os seus colegas, quantos o iriam ajudar, caso solicitasse ajuda?	Of all your colleagues, how many would help you if you asked for help?
A16.8	De todos os seus amigos, quantos o iriam ajudar, caso solicitasse ajuda?	Of all your friends, how many would help you if you asked for help?

Table 33 - Factors related to Help & Trust

A16.1	Quantos amigos tem?	How many friends do you have?
A16.2	Quantos colegas/companheiros de escola tem?	How many colleagues do you have?
A16.6	De todos os seus familiares, vizinhos, amigos, colegas de trabalho, ex-colegas de escola, quantos têm ligações entre si?	Of all your family members, neighbors, friends, co-workers, former classmates, how many have connections with others?

Table 34 - Factors related to Relationships

Component 2 includes A16.1, A16.2, and A16.6, questions related to “Relationships” (see *Table 34*). The first one with a loading of 0.777 after applying VARIMAX, A16.2 with a loading of 0.836 and the third one with a loading of 0.766. In this case the power of

explanation of the variables increased significantly after rotation (Hair, 2010), as the initial values of A16.1 was -0.368, of A16.2 was -0.362, and of A16.6 was -0.205.

A16.7A	De todos os seus familiares, vizinhos, amigos, colegas de trabalho, ex-colegas de escola, quantos têm uma profissão?	Of all your family members, neighbors, friends, co-workers, former classmates, how many have a profession?
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Table 35 - Factor related to Profession

Component 3 comprehends A16.7A, a variable related to “Professional” (see Table 35) with a loading of 0.881 after VARIMAX rotation (see Table 36).

Rotated Component Matrix^a			
	Component		
	1	2	3
A16.1	,299	,777	
A16.2	,176	,836	
A16.3	,753	,315	
A16.4	,775	,362	-,161
A16.5	,721		
A16.6	,128	,766	,193
A16.7_A			,881
A16.7	,673	,353	,352
A16.8	,625		,571

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

a. Rotation converged in 9 iterations.

Table 36 - Bonding Rotation Matrix

Component 1 – Help & Trust

Component 1 was named of “Help & Trust”, since it aggregates indicators referring to the number of relatives, friends and colleagues whom CEOs can trust and ask for help in case of need.

Component	Cronbach's Alpha	AVE	CR	
1	0.820	0.580	0.873	✓

Table 37 – Reliability measures of Component 1

Analysing the reliability of Component 1, this presented a Cronbach Alpha value of 0.820, a Composite Reliability of 0.873 and an Average Variance Explained of 0.580, all of which above the minimum accepted values (*Table 37*), showing a good internal consistency of the items in the scale (Gliem & Gliem, 2003).

Component 2 – Relationships

Component 2 was designated “Relationships”, as it includes questions related to the number of relatives, friends and colleagues CEOs have, and the number of relationships existing among them.

Doing the same with Component 2, this one revealed a Cronbach Alpha of 0.767, which is a good value, an AVE of 0.680 and a CR of 0.864, all of them above the minimum accepted values (*Table 38*), showing a good internal consistency of the items in the scale (Gliem & Gliem, 2003).

Component	Cronbach's Alpha	AVE	CR	
2	0.767	0.680	0.864	✓

Table 38 – Reliability measures of Component 2

The third component was excluded, once it presented one single item, which is theoretically very poor.

Therefore, in the Social Capital scale, besides the construct Bridging, previously validated by the Confirmatory Factor Analysis, there will be two new constructs: Help & Trust and Relationships validated by the Exploratory Factor Analysis, as summarized in *Table 39*.

Dimension	Cronbach's Alpha	AVE	CR	
Bridging	0,892	0,566	0,911	✓
Relationships	0,767	0,680	0,864	✓
Help&Trust	0,820	0,580	0,873	✓
Professional				×

Table 39 - Summarized results of the Dimensions

5.2.3 Internal Network Cooperation/Silo Effect

The scales measuring the constructs Lack of Silo Mentality and Communications and Relationships were validated by the Confirmatory Factor Analysis. However, the scale Silos was not validated, therefore an Exploratory Factor Analysis was made.

Question B10.3 had to be reverted due to the apparent opposite meaning, when compared to the other indicators of the construct considered.

Doing an Exploratory Factor Analysis to the scale used to measure Silos, it was obtained a Correlation Matrix (see *Table 39*).

The Factor Analysis Model proved to be adequate since results for both KMO and Bartlett Sphericity Test. In this case the KMO was 0,694 which was above the minimum accepted value showing there is a good correlation among the variables, and the Sphericity test for a significance level of 0,000 reveals that there is correlation among some variables (*Table 40*). Therefore, the Factor Analysis Model is an appropriate technique.

Correlation Matrix										
Correlation		B10.1	B10.2	B10.4	B10.5	B10.6	B10.7	B10.8	B10.9	B10.3Rev
	B10.1	1,000	,156	,259	,440	,438	,099	,340	,359	-,245
	B10.2	,156	1,000	,251	,232	,189	,501	,161	,127	-,337
	B10.4	,259	,251	1,000	,273	,275	,150	,219	,301	-,145
	B10.5	,440	,232	,273	1,000	,786	,209	,182	,165	-,186
	B10.6	,438	,189	,275	,786	1,000	,187	,249	,260	-,165
	B10.7	,099	,501	,150	,209	,187	1,000	,254	,183	-,234
	B10.8	,340	,161	,219	,182	,249	,254	1,000	,751	-,161
	B10.9	,359	,127	,301	,165	,260	,183	,751	1,000	-,180
	B10.3Rev	-,245	-,337	-,145	-,186	-,165	-,234	-,161	-,180	1,000

Table 39 - Silos Correlation Matrix

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling.		,694
Bartlett's Test of Sphericity	Aprox. Chi-Square	542,292
	df	36
	Sig.	,000

Table 40 - Silos KMO & Bartlett Test

Using the eigen values criteria, it is possible to notice that the 9 components are reduced up to 3 factors, as the first three components revealed eigenvalues greater than 1, and these three components are responsible for the explanation of 65.45% of total variance (Table 41).

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	3,191	35,451	35,451	3,191	35,451	35,451	2,194	24,378	24,378
2	1,355	15,057	50,508	1,355	15,057	50,508	1,909	21,209	45,587
3	1,345	14,942	65,450	1,345	14,942	65,450	1,788	19,862	65,450
4	,838	9,316	74,766						
5	,813	9,037	83,804						
6	,559	6,211	90,014						
7	,454	5,047	95,061						
8	,243	2,700	97,761						
9	,202	2,239	100,000						

Extraction Method: Principal Component Analysis.

Table 41- Silos Eigenvalues Matrix

Having three components to be analyzed, and once the Component Matrix does not maximize the loadings of each variable, the Orthogonal Rotation (VARIMAX) is applied and the three components can be described in terms of loadings of variables for each factor (*Table 42*).

Rotated Component Matrix^a

	Component		
	1	2	3
B10.1	,615	,382	
B10.2	,120		,846
B10.4	,354	,300	,246
B10.5	,906		,162
B10.6	,894		,104
B10.7		,125	,783
B10.8	,115	,893	,141
B10.9	,140	,914	
B10.3Rev	-,148	-,122	-,575

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

a. Rotation converged in 4 iterations.

Table 42 - Silos Rotated Component Matrix

Component 1, named “Sharing”, after analyzing the loadings of each variable with significant loadings, comprehended B10.1 with a loading of 0.615, B10.4 with a loading of 0.354, B10.5 with a loading of 0.906 and B10.6 with a loading of 0.894 (see *Table 43*).

B10.1	Existem medidas que incentivam a partilha de informação entre departamentos.	There are measures that encourage the sharing of information between departments.
B10.4	É frequente existirem atividades extra-laborais conjuntas.	Often there are joint activities after work.
B10.5	As tarefas estão adequadamente definidas e atribuídas.	Tasks are adequately defined and attributed.
B10.6	As responsabilidades estão devidamente definidas.	Responsibilities are well defined.

Table 43 - Factors related to Sharing

Component 2 included variables B10.8 with a loading of 0.893, and B10.9 with a loading of 0.914, and was named “Rewards”. Although this component included only two items, given its theoretical relevance, it was decided to maintain it (see *Table 44*).

B10.8	Existem recompensas financeiras pelos resultados do departamento/secção.	There are financial rewards by departmental results.
B10.9	Existem recompensas financeiras pelos resultados da organização.	There are financial rewards by organizational results.

Table 44 - Factors related to Rewards

Component 3 comprehended three variables B10.2, with a loading of 0.846, B10.3Rev, with a loading of -0.575, and B10.7 with a loading of 0.783. This factor was named “Independence” based on the meanings of the variables (see *Table 45*).

B10.2	Cada departamento/secção funciona de forma autónoma.	Each department works autonomously.
B10.3Rev.	Os departamentos/secções são interdependentes.	Departments are interdependent.
B10.7	Cada departamento/secção tem a sua própria cultura.	Each department has its own culture.

Table 45 - Factors related to Independence

Reliability tests to the three scales: Sharing, Rewards and Independence were carried out.

Component 1 – Sharing

Component 1 was called Sharing, since it includes questions related to measures promoting information sharing among departments, the existence of jointly out of the office activities, and if responsibilities and tasks are adequately defined.

Component	Cronbach's Alpha	AVE	CR	
1	0.708	0.573	0.838	✓

Table 46 - Reliability measures of Component 1

Assessing the reliability of Sharing and observing *Table 46*, it could be noticed that the values of all the reliability measures (Cronbach's Alpha, AVE and CR) are above the minimum acceptable values, revealing a good fit of the scale.

Component 2 – Rewards

Component 2 was designated “Rewards”, since this component aggregated questions related to the existence of department and/or organizational financial results.

Component 2 also presented a very good internal consistency among the items in the scale (Gliem & Gliem, 2003), with a value of the Cronbach Alpha of 0.858 (*Table 47*), which is a good value. Additionally, both AVE and CR measures presented values above the minimum values accepted, indicating a good fit of the scale.

Component	Cronbach's Alpha	AVE	CR	
2	0.858	0.874	0.933	✓

Table 47 – Reliability measures of Component 2

Component 3 – Independence

Component 3 was named “Independence”, since it included indicators related to department autonomy, interdependent sections, and the existence of subcultures in each organizational department.

Component 3 showed values below the minimum accepted for the three measures: Cronbach's Alpha, Average Variance Explained and Composite Reliability, thus revealing a bad fit of the scale, demonstrating its lack of reliability, being therefore excluded from the model (see *Table 48*).

Component	Cronbach's Alpha	AVE	CR	
3	-0.073	0.568	0.511	✗

Table 48 – Reliability measures of Component 3

As a summary, it can be stated that the construct Silos was measured with the scales Sharing and Rewards validated by this Exploratory Factor Analysis, as summarized in *Table 49*.

Dimension	Cronbach's Alpha	AVE	CR	
Sharing	0,708	0,573	0,838	✓
Rewards	0,858	0,874	0,933	✓
Independence	-0,073	0,568	511	✗

Table 49 - Summarized results of the Components

5.3 STRUCTURAL EQUATION MODEL

The standard regression weight of effects of each variable was estimated using the Partial Least Squares Regression, a statistically significance calculated using bootstrapping (a non-parametric technique). And, the significance of the relationships was statistically estimated for a 95% confidence level.

All the bootstrapping results of the model, can be seen in Appendix C.

5.3.1 Results and Discussion

Considering pvalues < 0.05, Table 50 shows the statistically significant relationships of the model.

Relationships	P Values <0,05	Standard Regression Weights
Age -> Communications and Relationships	0,027	0,019
Conscientiousness -> Rational Culture_	0,000	0,356
Conscientiousness -> Sharing	0,044	0,178
Entrepreneurial Culture -> Rewards	0,011	0,370
Entrepreneurial Culture -> Sharing	0,001	0,379
Extraversion -> Communications and Relationships	0,019	0,196
Extraversion -> Silo Mentality	0,021	0,195
Extraversion -> Team Culture	0,000	0,343
Help&Trust -> Entrepreneurial Culture	0,001	0,227
Help&Trust -> Rational Culture_	0,039	0,175
Help&Trust -> Sharing	0,002	0,153
Help&Trust -> Silo Mentality	0,029	0,095
Management Tenure -> Communications and Relationships	0,019	-0,213
Openness to Experience -> Entrepreneurial Culture	0,000	0,426
Openness to Experience -> Sharing	0,002	0,255
Openness to Experience -> Silo Mentality	0,016	0,195
Rational Culture_ -> Sharing	0,003	0,336
Rational Culture_ -> Silo Mentality	0,042	0,225
Team Culture -> Communications and Relationships	0,007	0,369
Team Culture -> Silo Mentality	0,035	0,284

Table 50 - Statistically Significant Relationships for a pvalue < 0.05.

Considering only the statistically significant relationships for a $p\text{-value} < 0.05$, a new model was designed (Figure 6). Analyzing this model and the data from the table, it is possible to have a better understanding of some of the relationships.

One thing that becomes explicit is that CEOs' characteristics whether in terms of psychological characteristics, whether in terms of social capital, particularly bonding social capital, have an impact in the organization characteristics, in both culture and silo effect (internal network cooperation) which includes Communications and Relationships, the construct which measures the firm's informal relationships, Silo Mentality, Sharing and Rewards, while CEO observable characteristics have influence only in the organization ability to create and develop informal networks, reflected upon the way employees relate to each other to have their work done, regardless any department or firm boundaries that might exist, or how the firm is seen within the industry (Communications and Relationships).

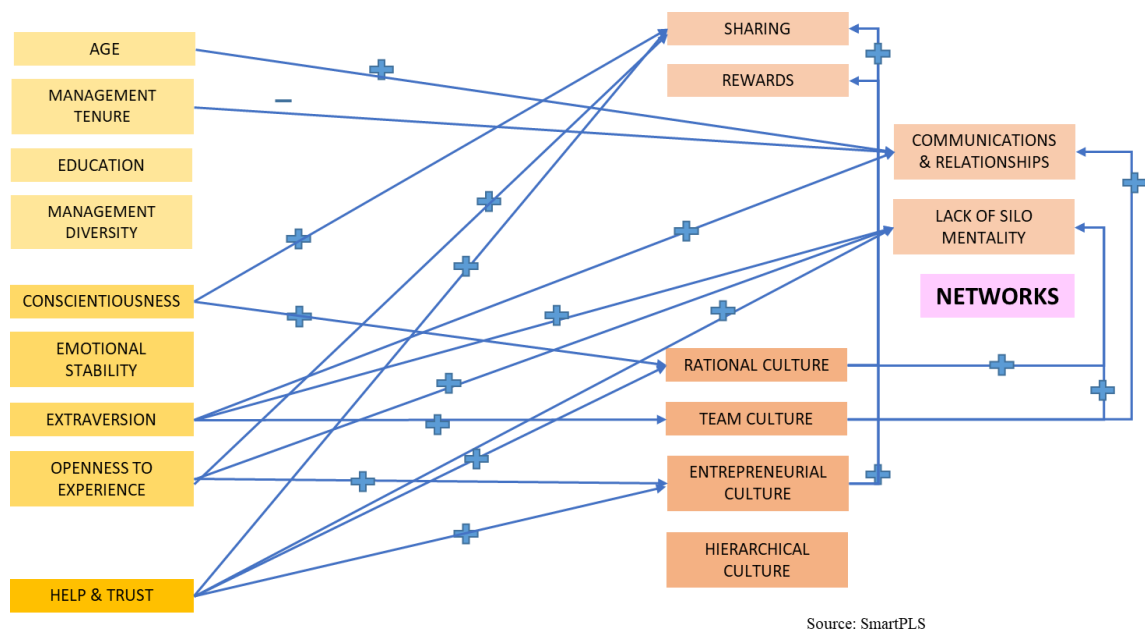


Figure 6 - Theoretical Framework with the statistically significant relationships

This is, the older the CEOs are, the more likely they are to engage and develop relationships with their stakeholders, the more likely CEOs are to create conditions for the employees to engage in collaboration networks, in doing whatever it is necessary to

have the work done regardless any organizational boundaries (Communications and Relationships).

If CEOs have been CEOs for a long time, the less prone (Management Tenure), they are to pull down possible work and team barriers that may exist among the members of the organization, and among organizations, and the less likely it is to have the members committed to the organization, and less likely the organization is considered an active partner in the industry (Communications and Relationships).

The organization tends to present an Organizational Culture closer to Rational, the more organized and reliable CEOs are (Conscientiousness), once CEOs tend to be more task oriented than relationship oriented, so it is expected to have an organization where planning dominates, tasks are well defined, outcomes are clearly measured, efficiency and productivity are the goal. If organizational culture is Rational then it is expected that there are measures promoting not only information sharing and clarity in the definition of responsibilities and tasks (Sharing), but also encouraging people to circulate among different departments, to assume different functions within the firm and to work with whoever it might be necessary to get the work done, overcoming any working barriers (Lack of Silo Mentality).

In a creative and flexible organization that pursues growth and tends to respond to changes in external environment (Entrepreneurial culture), the more financial rewards there will be for both the department and the organizational outcomes (Rewards). The more the organization promotes entrepreneurship, flexibility and growth by trying to respond to changes in the environment, it is most probable to have tasks and responsibilities clearly defined and certain activities to facilitate information sharing, group work and out-of-the-office joint activities, often leading to the creation of internal networks, with the aim of achieving the goals (Sharing).

If CEOs are sociable, active and assertive (Extraversion), then it is highly probable that the organization presents a culture closer to Team Culture, this means a culture where empowerment, decentralization and cohesion dominates, where members are supportive and there is human resource development. When CEOs are sociable and assertive (Extraversion), the more likely to have people within the organization working with whoever might be necessary to have the work done regardless any departmental or

organizational boundary – developing internal collaboration networks, to have a good relationship with customers and suppliers that would help the organization to overcome quickly any potential problem (Communications and Relationships), increasing the odds of establishing external networks. If CEOs are energetic, active and talkative (Extraversion), then the more likely it is to have people encouraged to occupy different jobs within the organization to gain experience (Lack of Silo Mentality).

The number of members in the organization, friends and relatives in whom CEOs can trust and to whom they can ask for help also have an impact in organizational culture. If CEOs can trust and have help from a good number of members, relatives and friends then it is highly possible to have effects in the organization culture, being it possible to be an entrepreneurial or rational culture. Therefore, it can be said that Help & Trust, this dimension of the bonding social capital has an impact on organizational culture. Additionally, it is also visible the influence of Help & Trust in developing internal collaboration networks, since the more friends and relatives in whom CEOs can trust the more people is encouraged to move across the different departments and assume different positions within the organization to gain experience and to create a team within the organization (Lack of Silo Mentality). The more friends and relatives in whom CEOs can trust the more likely it is to have tasks and responsibilities clearly defined, jointly activities out of the office and measures promoting information sharing within the organization (Sharing).

The more open to new ideas and experiences are the CEOs (Openness to experience), the more risk takers they are, the more they tend to have organizations with entrepreneurial cultures, viewed as open systems, where innovation and creativity prevails due to the sense of imagination of the CEO. The more open it is the CEO the more likely it is to find jointly activities out of the office, information sharing among the departments, tasks and responsibilities clearly set (Sharing). And, people tend to assume different positions in different departments, knocking down any working barriers, developing a sense of teamwork (Lack of Silo Mentality), creating internal networks if CEOs are creative and open to new ideas.

It is also visible that an organizational culture featured by being decentralized and promoting mutual help, teamwork and empowerment (Team culture) has also an impact

on the way people work with each other, not only within the organization but also with other organizations. Thus, the more team spirit there is in the organization, the more likely it is to have work barriers knocked down and people working together (Sharing).

Variables like Agreeableness and Bridging in this case were not considered significant in the explanation of the impact of CEO characteristics in the organization and above all, in their ability to establish and manage cooperation networks. Therefore, it can be said that it is not important for the analysis if a CEO is warmth, flexible, cooperative or tolerant (Agreeableness), since it was not found any effect of this personal characteristic in the organization. The same can be said in what concerns the number of economic, politic, social, cultural and governmental groups, that may exist in the community, as there was no evidence of its influence on how the CEO impacts the organization activity (Bridging).

Moreover, variables like Education, Management Diversity and Emotional stability were also left out of the explanation of the model, meaning that both CEO education and experience were not found to have effect on the CEO ability to develop collaboration networks, nor it was relevant if CEOs were anxious, calm or self-confident.

For all this, it can be said that the CEOs' Age and Management Tenure (Observable variables) and Conscientiousness, Extraversion and Openness to Experience (Psychological variables), and Help & Trust (Social Capital) are the variables that have impact in the organization (in culture and in silo effect), and in turn organizational culture influence the ability of establishing and managing cooperation networks.

There is strong evidence that CEO personal characteristics, mainly both observable variables (Age and Management Tenure) and Extraversion do have an impact on organizational culture and silo effect fostering the creation and development of informal networks of collaboration, either within the firm either with their main stakeholders. However, there is no trace of evidence of CEO personal characteristics on establishing formal external networks with competitors, complementors, customers or providers or universities.

5.4 MULTI-GROUP ANALYSIS / MANAGERIAL DISCRETION

A Multi-Group Analysis (MGA) was conducted to assess if there were any significant differences among their group-specific parameter estimates. According to the literature review those differences vary depending on the industry, on the size of the firm and on the existence of a Top Management Team (in addition to the CEO).

First, it was assessed if there were significant differences between the two sectors under research. Second, it was investigated whether there were significant differences regarding the size of the firm, in terms of number of employees. Another comparison done was between firms with top management teams, in addition to the CEO, and firms managed only by the CEO.

The main reason to make all these analyses abides in the objective of determining if in fact, industry, firm size and TMT really have an impact on the way CEOs influence the organization, mainly its culture and silo effect, and how they establish and manage collaboration networks.

5.4.1 Multi-Group Analysis of the Industry

Considering the model estimated as a starting point, and generating two groups of data, one related to Accommodation and Catering Activities, and the other one to the Food, Beverage and Tobacco Industry, two different models appeared.

Accommodation and Catering Activities

The standard regression weight of effects of each variable was estimated using the Partial Least Squares Regression, and all the bootstrapping results, can be seen in Appendix D.

Table 49 presents all the statistically significant relationships considering pvalues < 0.05, after analyzing the bootstrapping results.

Using only the statistically significant relationships, for $p\text{-value} < 0.05$ it was redesigned the model as shown in *Figure 7*, as all the other hypothesis were not accepted. And, with the information from the tables, it was possible to interpret and understand some of the variables' relationships.

Firstly, it stands out that variables like Age, Education, Management Tenure, Emotional Stability, Rewards and Networks were left out of the model.

Relationships	p-Values	Path Coefficients
Conscientiousness -> Rational Culture_	0,000	0,425
Entrepreneurial Culture -> Sharing	0,028	0,395
Extraversion -> Team Culture	0,011	0,291
Help&Trust -> Entrepreneurial Culture	0,041	0,215
Help&Trust -> Rational Culture_	0,042	0,237
Hierarchical Culture -> Silo Mentality	0,031	-0,280
Management diversity -> Rational Culture_	0,002	0,273
Openness to Experience -> Entrepreneurial Culture	0,000	0,458
Rational Culture_ -> Sharing	0,013	0,427
Team Culture -> Communications and Relationships	0,005	0,488
Team Culture -> Silo Mentality	0,457	0,178

Table 49 - Statistically Significant Relationships for a $p\text{-value} < 0.05$, in the Accommodation Activities Industry.

Secondly, it is noticeable that it is the CEOs' psychological characteristics that have a greater influence in organizational culture and culture have an impact on how informal internal collaboration networks are created and developed (Silo effect) within and among organizations from the Accommodation Industry, confirming the theory presented in the literature review.

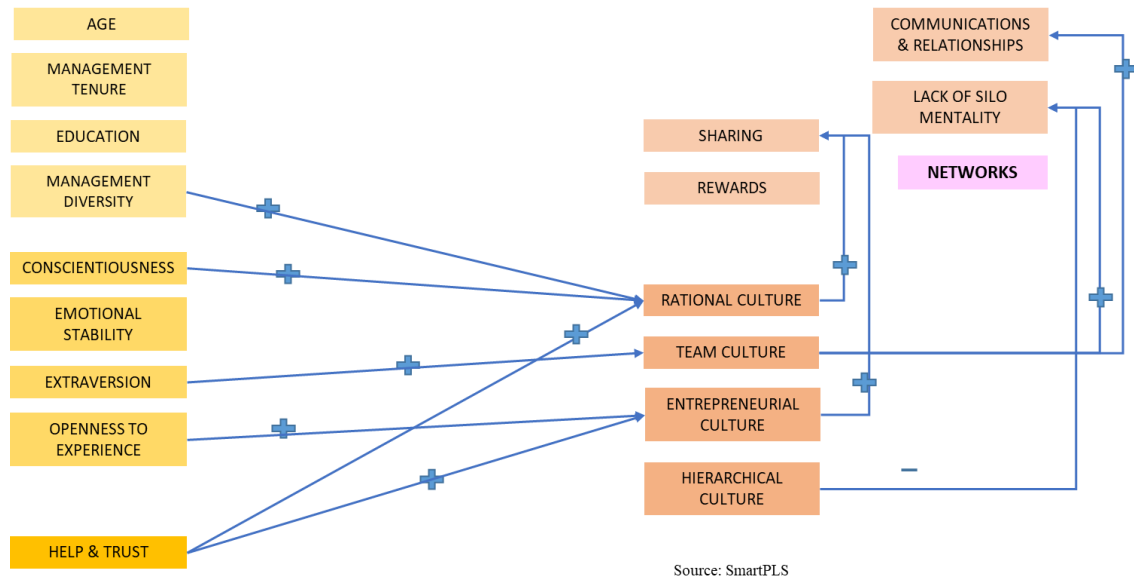


Figure 7 - Theoretical Framework with the statistically significant relationships in the Accommodation Industry

If CEOs are organized, reliable, responsible, careful (Conscientiousness) the more likely they are to create rational organizational cultures, which is consistent with the literature. Since O'Reilly III *et al.* (2014) found that CEOs with a high score in conscientiousness are less attracted to innovation and risk-taking, and rational cultures are known to have an emphasis on control and stability (Cameron & Quinn, 2011), and for pursuing efficiency and measurable outcomes (Kalliath *et al.*, 1999). The more diverse is the CEO experience in management functions and organizations (Management Diversity), more likely to have rational cultures. For this to happen it is not surprising the significant relationship of Rational Culture with the variable Sharing, whose indicators measure if tasks and responsibilities are clearly defined and if there are out of the office activities and any kind of measures to encourage information sharing in the organization. All these measures and activities are ways of guaranteeing that everyone in the organization is aware of their role within it.

If a CEO is sociable, assertive and active with energy (Extraversion) then the CEO might excite the members of the organization, to instill autonomy, empowerment and teamwork, thus creating a Team culture. When this happens, it is more likely to see firms as active participants in the industry, and maintaining good relationships with their customers and suppliers, since employees work with whoever it is necessary to have the work done, regardless any department or organizational boundaries, creating and developing informal

networks of cooperation (Communications and Relationships). In fact, in organizations where team culture is dominant people is encouraged to circulate among the different departments assuming different tasks in order to gain experience, create a team and to overcome working obstacles (Lack of Silo Mentality).

CEOs more open to new ideas and experiences, more creative, innovative and broadminded (Openness to Experience) tend to create organizations with Entrepreneurial cultures, which are viewed as open systems, flexible, creative, innovative and risk takers (Kalliath *et al.*, 1999).

The more entrepreneurial, an organizational culture is, the more frequent it is to have out-of-the-office activities, tasks and responsibilities clearly set, and activities and measures promoting information sharing among the departments (Sharing).

In the Accommodation and Catering Activities Industry there is also the influence of CEOs social capital in organizational culture, namely of Bonding Social Capital, measured by the Help & Trust dimension. The more relatives and friends' in whom CEOs can trust and ask for help, the more likely to have either a more open, flexible and creative organization (Entrepreneurial culture) either a more efficient organization focused on achieving stability and a competitive market position (Rational culture). This is not surprising as firms with Rational cultures tend to understand the advantages of establishing relationships (Cameron, 2009).

If organizations present a culture dominated by the respect for formal hierarchy, rules and procedures and good definition of employees' responsibilities (Hierarchical Culture), then it is expected that employees become specialized in their job and feel less attracted to assume different functions within the organization and move across different departments since it is likely to exist some barriers that inhibit teamwork within the organization, and with members of other organizations (Lack of Silo Mentality). Therefore, an organization with a Hierarchical Culture tends to discourage cooperation among employees, and with other organizations' members, as specialization is the goal and the moving across sections and assuming different jobs is seen as loss of efficiency, so greater the odds of having silos within the organization.

In conclusion, it shall be said that in this industry it is not relevant for the interpretation of the model, the age of the CEO, or if CEOs have been playing that role for a long or a

short time (Management Tenure), nor the education, or if CEOs are self-confident or anxious (Emotional Stability), and not even if firms from this industry reward employees for the organization or departmental good results (Rewards).

Although in this sector it can be found firms with Rational cultures, which tend to be acquainted with the pros and cons of establishing both internal and external relationships, in this case there is only strong evidence of the importance of developing and maintaining informal collaboration networks, since the construct Networks was also left out of the explanation.

Food, Beverage and Tobacco Industry

Applying the model to the Food, Beverage and Tobacco Industry, to see which relationships were statistically significant, using the Partial Least Squares Technique, it was obtained the table with all the results, which can be found in Appendix D.

Table 50 was built considering all the statistically significant relationships, with pvalue < 0.05.

Relationships	p-Values	Path Coefficients
Conscientiousness -> Rational Culture_	0,001	0,329
Education -> Communications and Relationships	0,043	-0,200
Education -> Hierarchical Culture	0,009	-0,351
Entrepreneurial Culture -> Rewards	0,039	0,579
Entrepreneurial Culture -> Sharing	0,042	0,311
Extraversion -> Team Culture	0,000	0,416
Management Tenure -> Communications and Relationships	0,024	-0,285
Management Tenure -> Lack of Silo Mentality	0,010	-0,276
Openness to Experience -> Entrepreneurial Culture	0,000	0,359
Team Culture -> Lack of Silo Mentality	0,024	0,436

Table 50 - Statistically Significant Relationships for a pvalue < 0.05, in the Food, Beverage and Tobacco sector.

Using the statistically significant relationships, for $p\text{-value} < 0.05$, a model applied to the Food, Beverage and Tobacco Industries was redesigned, and the result is shown in *Figure 8*, as all the other hypothesis were not accepted.

Analyzing the statistically significant relationships for the Food, Beverage and Tobacco Industries, and using data from the tables, it is possible to interpret some of the relationships.

For this level of significance (0.05), the model does not include variables like Age, Management Diversity, Emotional Stability and Help & Trust, so CEOs experience in terms of variety of functions or industries, or their age or impulsiveness or anxiety is not considered relevant for the analysis. Not even the number of relatives, friends and colleagues is included in the model, nor the ability of establishing external collaboration networks, as both constructs Help&Trust (Bonding Social Capital) and Networks were left out of the model.

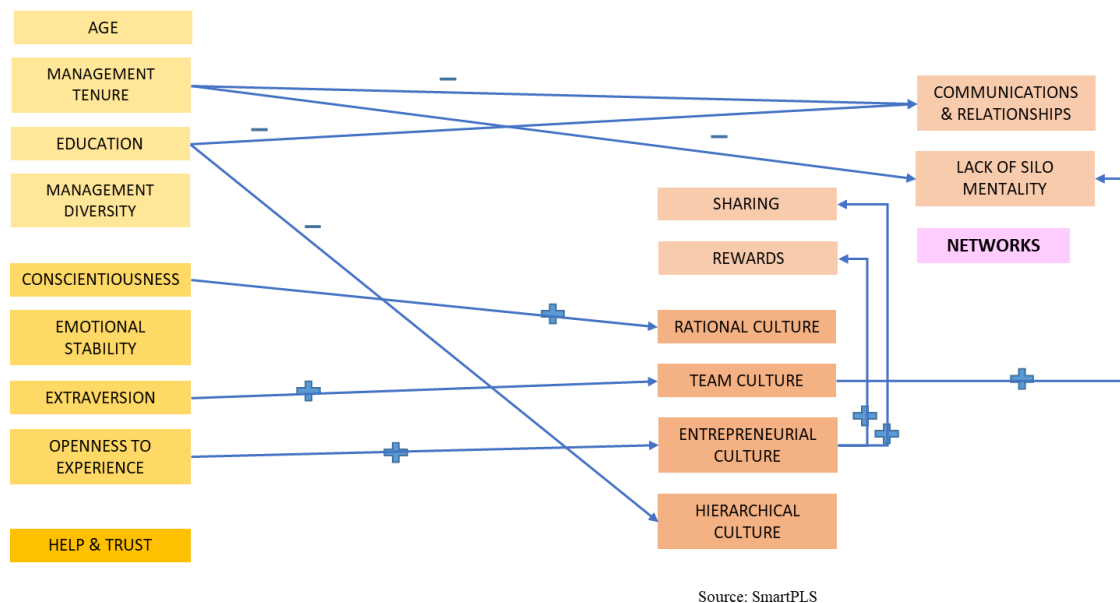


Figure 8 - Theoretical Framework with the statistically significant relationships for the Food, Beverage and Tobacco Industries

However, it is evident that CEO's characteristics have influence in organizational culture and in their ability to develop internal collaboration networks (Silo effect). Observable characteristics like Management Tenure and Education, really have an impact in the

organization, in both culture and Silo effect. While psychological characteristics such as Conscientiousness, Extraversion and Openness to Experience only have influence on the culture of the firm, in turn, organizational culture influences the way the organization creates and develops cooperation networks, at least internally (Silo effect).

Nevertheless, it is noticeable that it is the CEO observable variables (Education and Management Tenure) that have more effect in how CEOs build and sustain informal collaboration networks both internal and externally (Communications and Relationships).

The longer they hold the position of CEO (Management Tenure), the less they will encourage people to move across different departments, the less they will encourage the existence of a team spirit or worry about knocking down any possible barriers that might hinder the work flow (Lack of Silo Mentality). The longer the tenure as CEO, the less likely the organization is seen as an active participant within the industry, and the less people will work with whoever is necessary to have the work done, regardless any department or organizational boundary (Communications & Relationships), so the less probable is the organization to engage in collaboration networks either formal or informally. This also happens the higher the educational level of the CEO.

Moreover, the higher the level of education of CEOs the less centralized will be the authority, less formal rules and procedures will be within the organization, so minor is the probability of having an organization with a hierarchical culture.

The more reliable and responsible the CEO is (Conscientiousness), greater the probability of creating a culture based on planning, measured outcomes, efficiency and well-defined tasks (Rational Culture).

If CEOs are more extraverted, more sociable, assertive and active (Extraversion) the more likely they are to create an organization with a Team Culture, where autonomy, mutual help, cohesion, decentralization is encouraged. And, an organization with a team culture is more likely to have employees motivated to assume different functions and move across different departments within the organization, as there are no working barriers, what really matters is to have the job done (Lack of Silo Mentality).

A creative, imaginative and broadminded CEO (Openness to Experience) is more likely to adopt new ideas, processes and experiences (Gow *et al.*, 2016), which has an impact in organizational culture, by leading to the creation of an Entrepreneurial Culture,

characterized by being flexible, creative, open system, innovative and risk taker. In this case, it is highly probable that there are rewards, financial as a way of rewarding for the department and/or the organization results. And, it is common to find Entrepreneurial cultures where tasks and responsibilities are clearly defined, with jointly out-of-the-office activities and measures promoting information sharing among departments (Sharing).

Therefore, it can be said that CEOs Education and Management Tenure (Observable variables), Conscientiousness, Openness to Experience and Extraversion (Big Four Framework) are the variables that influence organizational culture and their ability to create and manage cooperation networks (Silo effect). Age, Management Diversity, Emotional Stability and Help & Trust (Bonding Social Capital) are individual characteristics of the CEO, which were not considered to have any influence in the characteristics of firms from the Food, Beverage and Tobacco sector.

However, it should be highlighted the influence of CEO psychologic characteristics in organizational culture and in turn the effect of organizational culture in building internal and possibly external collaboration networks, this is in reducing the silo effect. On the other hand, the CEO observable characteristics have a direct impact in organizational silo effect.

Comparison

Apparently, it is noticeable that there are significant differences between the two sectors. Comparing the significant relationships of the two industries, at a significance level of 0.05, Table 51, puts in evidence the five significant relationships that both sectors have in common: Conscientiousness – Rational Culture, Entrepreneurial Culture – Sharing, Extraversion – Team Culture, Openness to Experience – Entrepreneurial Culture and Team Culture – Silo Mentality.

Variables like Education, Management Tenure and Rewards were not significant to explain the CEO influence in the Organization, and in their ability to develop and maintain cooperation networks, in the Accommodation sector, while in the Food, Beverage and Tobacco industries, variables like Management Diversity and Help & Trust

were left out of the model. However, in both sectors Age, Emotional stability and Networks were not considered relevant for the explanation how CEO personal characteristics have effect in organizational culture and in how collaboration networks are created and developed (Silo effect).

Accommodation Industry	Food, Beverage and Tobacco Industries
Conscientiousness -> Rational Culture_	Conscientiousness -> Rational Culture_
	Education -> Communications and Relationships
	Education -> Hierarchical Culture
	Entrepreneurial Culture -> Rewards
Entrepreneurial Culture -> Sharing	Entrepreneurial Culture -> Sharing
Extraversion -> Team Culture	Extraversion -> Team Culture
Help&Trust -> Entrepreneurial Culture	Management Tenure -> Communications and Relationships
Help&Trust -> Rational Culture_	Management Tenure -> Lack of Silo Mentality
Hierarchical Culture -> Lack of Silo Mentality	
Management diversity -> Rational Culture_	
Openness to Experience -> Entrepreneurial Culture	Openness to Experience -> Entrepreneurial Culture
Rational Culture_ -> Sharing	
Team Culture -> Communications and Relationships	
Team Culture -> Lack of Silo Mentality	Team Culture -> Lack of Silo Mentality

Table 51 – Relationships in common to both sectors at a significance level of 0.05.

Apparently, CEO Education and Management Tenure have more influence in the Food, Beverage and Tobacco industry than in the Accommodation industry. If CEOs are highly educated or if have been occupying that position for a long time the less likely the firm is seen as an active participant in the industry or people feel less prone to work with whoever it is necessary to accomplish their tasks, thus reducing the probability of developing collaboration networks, even informally. Probably, this happens due to some specificity required in terms of technical knowledge by some food and beverage firms, thus valuing managers tenure, experience and their academic training in certain technical areas. Or, more likely, this happens because the Food, Beverage and Tobacco industry is a more matured sector, where differences are more visible and stronger. In fact, there are more differences when compared to the Accommodation industry, a younger sector where CEO management tenure or CEO Education are not very important, probably because CEOs already have a higher level of education and have been in that position not for long.

Management Diversity and Help & Trust seem to be more relevant in the Accommodation rather than in the Food, Beverage and Tobacco sector. This might happen because it is a sector that normally recruits multipurpose people capable of carrying out a large multiplicity of tasks. The Accommodation sector usually prefer to recruit people from their acquaintances as often work needs to be done, without any direct supervision, and therefore the number of friends, relatives and colleagues in whom the CEO can trust and ask for help is for that reason important.

So, industry plays a significant role in the impact of CEO characteristics in Organizational Culture and Silo Effect, this is in their ability to develop and maintain informal networks either within the firm, either with customers and providers so as to get the firm working. The effect of CEOs' characteristics in firms from the Accommodation sector is different from the impact of their characteristics in firms from the Food, Beverage and Tobacco industry. In fact, CEO characteristics have more influence in organizational culture of firms belonging to the Food, Beverage and Tobacco sector, a more matured industry, than in organizational culture of firms from the Accommodation industry, a more dynamic sector, which is consistent with the existing literature (Finkelstein & Hambrick, 1987; Hambrick, 1995; Henderson *et al.*, 2006; Hutzschenreuter & Kleindienst, 2013).

Aiming at analyzing if there were any significant differences between the two industries, in the common significant relations, it was built *Table 52* with a summary of the PLS-MGA analysis. So, pValues of each industry, and of one sector versus the other, were used to check which coefficients differ significantly between these two industries.

	p-Values Accommodation	p-Values Food, Beverage & Tobacco	Path Coefficients-diff (Food, Beverage & Tobacco - Accommodation)	p-Values Accommodation vs Food, Beverage & Tobacco
Conscientiousness -> Rational Culture_	0,000	0,001	0,096	0,737
Entrepreneurial Culture -> Sharing	0,028	0,042	0,084	0,633
Extraversion -> Team Culture	0,011	0,000	0,125	0,209
Openness to Experience -> Entrepreneurial Culture	0,000	0,000	0,099	0,738
Team Culture -> Lack of Silo Mentality	0,457	0,024	0,258	0,199

Table 52 – Summary of PLS-MGA results

There are significant differences between the groups of the PLS analysis, at a 5% probability of error level, when pValues of the difference of group-specific results are smaller than 0.05 or larger than 0.95 (Sarstedt *et al.*, 2011).

In this case, all the common relationships have pValues smaller than 0.95 and greater than 0.05, which means that there are no significant differences between the variable relationships these two groups of firms have in common.

Therefore, it can be said that there are no significant differences in the relationships these two groups of firms have in common. Although the Food, Beverage and Tobacco sector presents a greater influence of the CEO and a larger number of significant relationships than the Accommodation industry, in the relationships both industries have in common the CEO influence in organizations from the Accommodation sector is not significantly different from the impact of the CEO characteristics in firms from the Food, Beverage and Tobacco industries.

5.4.2 Multi-Group Analysis of Firm Size

In this analysis, firm size was assessed only in terms of number of employees. The main reason for this abides in the fact that both Accommodation and Food, Beverage and Tobacco industries are essentially labor intensive, and therefore it seemed not very relevant to assess firm size in terms of business volume, but extremely important to carry out the multi-group analysis in terms of number of employees.

Number of Employees

In this case, it was created two groups: one with data related to firms with less than 10 employees, other with data referred to firms with more than 10 employees and less than 250 employees, considering the European Commission recommendation for assessing the size of small medium businesses.

Considering the model, and applying the PLS regression technique, two different models appeared and consequently the need to assess the statistical significance of the variable relationships.

Firms with less than 10 employees

Applying the model to the group of firms that have less than 10 employees, to see which relationships were statistically significant, using the Partial Least Squares Technique, it was obtained the table with all the results which can be found in Appendix E.

Considering $p\text{-values} < 0.05$, the statistically significant relationships were identified, and with them a table was built (*Table 53*).

Relationships	p-Values	Path Coefficients
Age -> Communications and Relationships	0,009	0,275
Conscientiousness -> Communications and Relationships	0,022	0,220
Education -> Hierarchical Culture	0,005	-0,283
Entrepreneurial Culture -> Sharing	0,008	0,464
Extraversion -> Rewards	0,464	0,103
Extraversion -> Team Culture	0,005	0,346
Help&Trust -> Entrepreneurial Culture	0,009	0,254
Management Tenure -> Communications and Relationships	0,021	-0,207
Management Tenure -> Team Culture	0,046	0,204
Management diversity -> Lack of Silo Mentality	0,050	-0,187
Openness to Experience -> Entrepreneurial Culture	0,000	0,360
Openness to Experience -> Lack of Silo Mentality	0,005	0,336
Rational Culture_ -> Communications and Relationships	0,003	0,491

Table 53 - Statistically Significant Relationships for a pvalue < 0.05, in firms with less than 10 employees.

Using only the statistically significant relationships for a pvalue < 0.05, with all the other hypotheses not accepted, a model applied to the group of firms with less than 10 employees was redesigned, and the result appears in *Figure 9*.

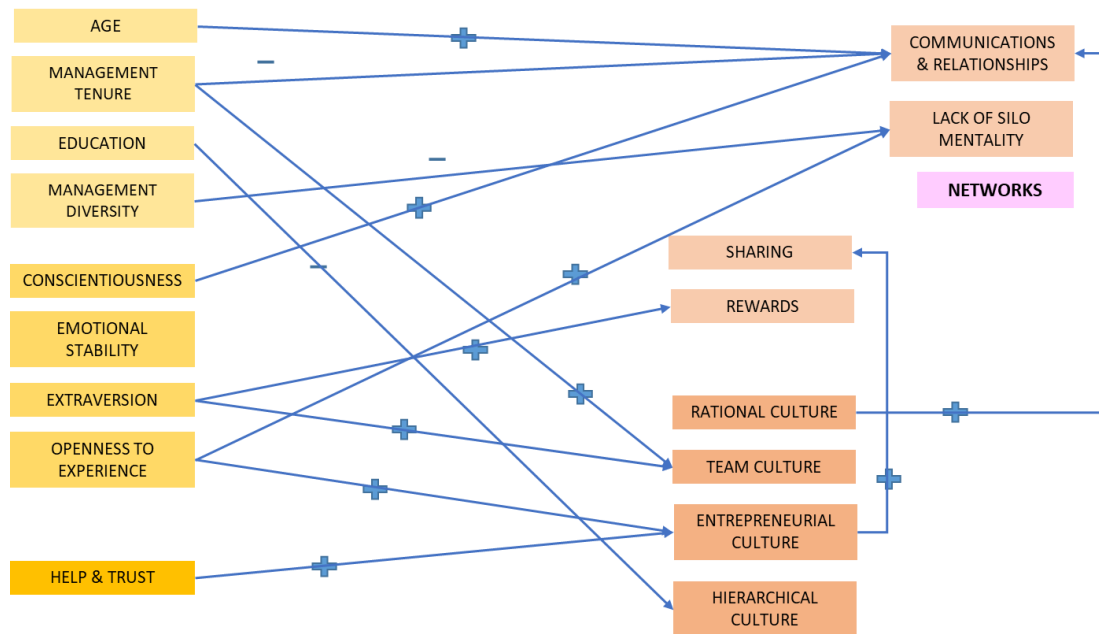


Figure 9 - Theoretical Framework with the statistically significant relationships for Firms with less than 10 employees

Firstly, it is obvious that CEO personal variables (observable and psychological) have impact in the organization, on Organizational Culture and in how employees develop relationships among them and with stakeholders, this is on their ability to create and develop collaboration networks (Silo Effect), except for the variables Emotional Stability and Networks which were not considered relevant in small firms.

CEOs social capital have impact only in organizational culture and in turn this might have influence on how the firm builds their informal cooperation networks.

The older the CEOs are, the more likely it is to have employees working with whoever is necessary to have the job done either internal or externally, more likely it is to have good informal relationships with suppliers and customers, who would help the firm in case any problem affected the organization activity (Communications & Relationships). The important is to achieve the goals and succeed.

In firms with less than 10 employees, the shorter the tenured (Management Tenure), the more organized and reliable (Conscientiousness) are the CEOs. Longer the CEO tenure (Management Tenure) the less likely would the organization be seen as an active participant in the industry, or would the employees be working with whoever it was necessary to have the work done regardless any boundaries across departments or organizations (Communications & Relationships). And, so less likely to have informal cooperation networks either internally or externally with customers and/or providers, thus increasing the probability of creating silos.

Longer the CEO tenure greater are the chances of creating a Team Culture within the organization, since the CEO has been there for a long time, tends to accumulate not only knowledge about the firm, but also about employees, tasks and skills firm specific and reward those who deliver the best results to the firm. On the other hand, less likely it is the organization seen as an active participant in the industry, and less likely are the employees to work with whoever it is necessary to get the job done (Communications & Relationships). So, a long tenured CEO will inhibit the creation of informal cooperation networks among the employees, and among stakeholders, thus increasing the existence of silos.

Higher the level of education of CEOs lower the likelihood of CEOs creating Hierarchical Cultures within firms with less than 10 employees. In small firms higher the education level of the CEO, the less likely to have an organization with clear lines of authority, respect for formal hierarchy and adherence to rules (Hierarchical Culture).

The less diverse is the experience of CEOs in terms of functions and firms (Management Diversity), the more people would feel encouraged to circulate across different departments to gain experience and more team spirit would be within the organization (Lack of Silo Mentality).

The more reliable, responsible and organized CEOs are (Conscientiousness), the more likely to have firms with less than 10 employees with good relationships with customers and suppliers that would help the firm in case of having working problems, and the more likely to be seen as an active player in the sector and having employees working with whoever it might be necessary to have the work done no matter the boundaries that might exist (Communications & Relationships). Therefore, a conscientious CEO is more likely

to develop informal cooperation networks either within the firm, either with the firm stakeholders.

An assertive and sociable CEO (Extraversion) is more likely to create a Team Culture in a firm with less than 10 employees, where there is a policy of rewarding financially the employees not only for the results of the department, but also for the firm results (Rewards). Usually, more extraverted CEOs are more interactive and energetic easily creating a sense of teamwork and cohesion.

The more open to new ideas and experiences (Openness to Experience), greater the probability of having a good team spirit within the organization, where people are encouraged to circulate through the different departments or to perform different tasks to gain experience (Lack of Silo Mentality).

Moreover, the more creative, open-minded are the CEOs (Openness to Experience), more likely it is to create an Entrepreneurial culture within the organization. Firms with less than 10 employees presenting entrepreneurial cultures, are more probable to present within the organization measures promoting information sharing, tasks and responsibilities clearly defined and joint activities out of the office (Sharing).

The more relatives, friends and colleagues, in whom CEOs of firms with less than 10 employees can trust and ask for help (Help & Trust), greater the odds of creating an Entrepreneurial culture within the organization. This shows that if CEOs could trust and ask for help to any of those relatives, colleagues or friends, then the organizational culture would be closer to the Entrepreneurial type, as the CEO social relationships might be an important source of resources like information, skills, knowledge or even financial.

Therefore, it shall be said as conclusion that CEO characteristics have a huge impact in firms of this size since observable variables (Management Diversity, Management Tenure, Education and Age), psychological variables (Conscientiousness, Openness to Experience and Extraversion), and Bonding Social Capital (Help & Trust) have impact on the organizational culture of firms with less than 10 employees, and on the firm ability to establish and develop cooperation among departments and stakeholders. On the contrary, variables like Emotional Stability and Networks were considered as not having any influence in the organization of firms with less than 10 employees, since here they were left out of the model.

Firms with more than 10 but less than 250 employees

Applying the model to the group of firms with more than 10 but less than 250 employees, and using the Partial Least Squares Technique, to see which relationships were statistically significant, it was obtained the table with all the results, which can be found in Appendix E.

Using the statistically significant relationships, with pvalues < 0.05, among the variables, *Table 54* was built.

Relationships	p-Values	Path Coefficients
Conscientiousness -> Rational Culture_	0,000	0,222
Entrepreneurial Culture -> Rewards	0,019	0,519
Entrepreneurial Culture -> Sharing	0,046	0,320
Extraversion -> Team Culture	0,005	0,346
Help&Trust -> Entrepreneurial Culture	0,009	0,254
Help&Trust -> Hierarchical Culture	0,277	0,294
Help&Trust -> Team Culture	0,034	0,255
Openness to Experience -> Entrepreneurial Culture	0,000	0,458
Rational Culture_ -> Sharing	0,049	0,365
Team Culture -> Lack of Silo Mentality	0,021	0,423

Table 54 - Statistically Significant Relationships for a pvalue < 0.05, in firms with more than 10 employees and less than 250.

Using all those statistically significant relationships when pvalues < 0.05, it was built a new model, as shown in *Figure 10*

In this group of firms having more than 10 and less than 250 employees, it immediately stands out that CEO observable variables have no effect in the organization. CEO observable variables have no impact in the firm ability to create or develop collaboration networks (Silo effect) nor in the firm organizational culture.

However, it is obvious the importance of CEO psychological variables, as Conscientiousness, Extraversion and Openness to Experience, and of CEO Social Capital, in particular, Bonding social capital (Help & Trust), in Organizational Culture of firms with more than 10 and less than 250 employees, and consequently in how culture can foster the development of a sense of collaboration within the firm, knocking down potential working barriers.

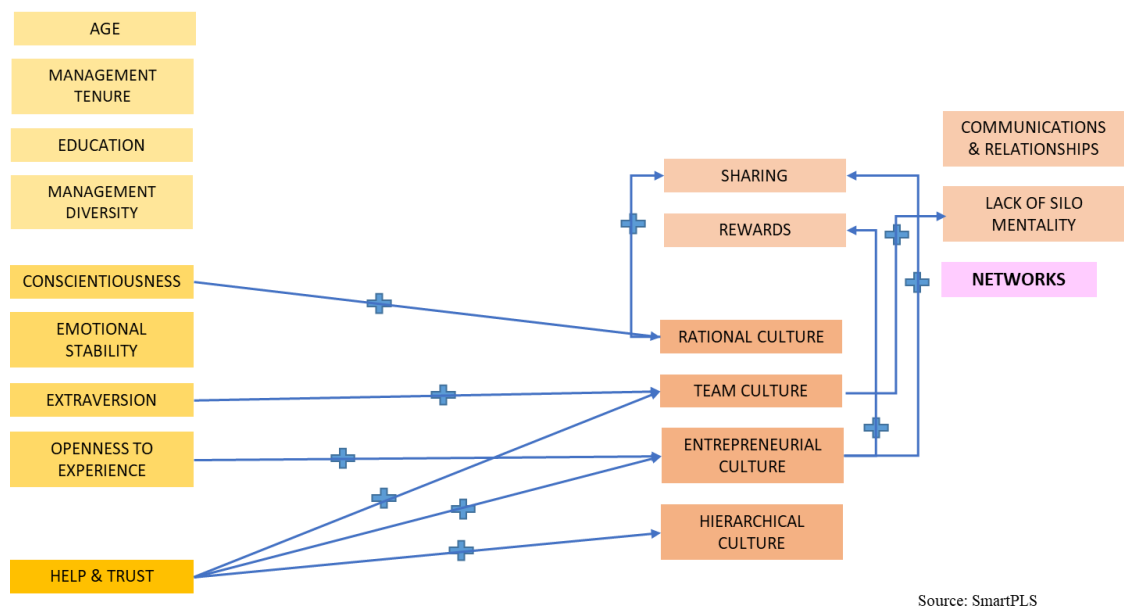


Figure 10 - Theoretical Framework with the statistically significant relationships for Firms with more than 10 employees and less than 250.

It seems that in firms of this size, if CEOs are responsible, perseverant and organized (Conscientiousness) greater the possibility of creating a Rational culture. Organizations with Rational cultures are organizations with emphasis on control, pursuing efficiency and measurable outcomes so that they can at least maintain their market position. Rational Cultures are more likely to implement measures that promote information sharing, to develop out-of-the-office activities and to have both tasks and responsibilities clearly defined (Sharing). Therefore, indirectly a conscientiousness CEO is more likely to introduce information sharing and jointly out-of-the-office activities, thus influencing the way employees develop informal relationships and thus reducing the existence of silos within the firm.

If CEOs are assertive, sociable and talkative (Extraversion) then they are more likely to create Team Cultures in firms with more than 10 and less than 250 employees. CEOs that create a culture dominated by values like empowerment, decentralization, autonomy, team work (Team Culture) in the organization, tend to encourage employees to perform different functions within the organization, favoring cohesion, and the existence of a good team work environment, where there are no working barriers inhibiting employees to do their job (Lack of Silo Mentality).

The more original, creative and open to new ideas and experiences CEOs are (Openness to Experience), the more likely they are to create Entrepreneurial Cultures, which are cultures where innovation, creativity and flexibility prevails. Therefore, the more likely it is to have financial rewards for the department or organizational results (Rewards), measures promoting information sharing, out-of-the-office activities (Sharing). CEOs open to new ideas and unusual processes tend to reward people with flexible and open team behavior (Costa & McCrae, 1997).

However, in firms with Entrepreneurial Cultures besides influencing the introduction of measures promoting information sharing and jointly out-of-the-office activities (Sharing) Entrepreneurial Cultures also influence the existence of financial rewards for the department and/or organizational results with the aim of rewarding their internal and external sources of creativity and innovation.

The number of relatives, friends and colleagues in whom CEOs can trust and ask for help in case of need (Help& Trust) also influences the firm organizational culture. The greater the number of relatives, friends and colleagues in whom CEOs can trust and ask for help the more likely it is to have a team culture, or an entrepreneurial culture or a hierarchical culture, in firms of this size.

Against the above, it can be said that CEO psychological characteristics and social capital have impact on organizational culture and in turn the culture of the firm has effect on how informal collaboration networks are developed. In these firms, CEO observable characteristics have no impact on firm organizational culture nor on silo effect, contrary to what happened in firms with less than 10 employees.

Comparison

Comparing the significant relationships of the two groups of firms of different size, at a significance level of 0.05, *Table 55* puts in evidence four significant relationships that the two groups have in common: Entrepreneurial Culture – Sharing, Extraversion – Team Culture, Help & Trust – Entrepreneurial Culture and Openness to Experience – Entrepreneurial Culture.

Firms with less than 10 employees	Firms with more than 10 and less than 250 employees
Age -> Communications and Relationships	
Conscientiousness -> Communications and Relationships	Conscientiousness -> Rational Culture_
Education -> Hierarchical Culture	Entrepreneurial Culture -> Rewards
Entrepreneurial Culture -> Sharing	Entrepreneurial Culture -> Sharing
Extraversion -> Rewards	
Extraversion -> Team Culture	Extraversion -> Team Culture
Help&Trust -> Entrepreneurial Culture	Help&Trust -> Entrepreneurial Culture
Management Tenure -> Communications and Relationships	
Management Tenure -> Team Culture	Help&Trust -> Hierarchical Culture
Management diversity -> Lack of Silo Mentality	Help&Trust -> Team Culture
Openness to Experience -> Entrepreneurial Culture	Openness to Experience -> Entrepreneurial Culture
Openness to Experience -> Lack of Silo Mentality	Rational Culture_ -> Sharing
Rational Culture_ -> Communications and Relationships	Team Culture -> Lack of Silo Mentality

Table 55 - Relationships in common to the two groups of firms for a significance level of 0.05.

When observing *Table 55*, it is possible to see that in smaller firms the influence of observable variables, like age, management diversity, management tenure and education, is considered relevant while in firms with more than 10 and less than 250 employees, the impact of these variables is not important at all. In fact, in bigger firms these observable variables are left out of the model, which means CEO characteristics have less influence in bigger firms than in smaller firms. In smaller organizations, observable variables not only have influence in organizational culture, mainly CEO education and CEO tenure, but also have impact in how collaboration networks (Silo effect) are created and developed, either internally and externally. In smaller firms, the variable Communications & Relationships which relates to the image of the organization in the

industry, to the type of relationship with the firm stakeholders' and how employees might work with whoever it is necessary to have their job done, regardless any department or organizational boundaries' is influenced by CEO age, tenure, conscientiousness and rational culture while in firms with more than 10 employees this variable was left out of the explanation.

In bigger firms the impact of the Bonding social capital is much more significant than in firms with less than 10 employees, particularly in influencing organizational culture, and thus indirectly influencing the way firms establish and maintain collaboration networks.

It seems that as the size of the firm increases, the effect of CEO characteristics decreases, and the influence of the organization becomes bigger. In firms with less than 10 employees there are eleven significant relationships related to CEOs characteristics and two concerning the organization whereas in the group of bigger firms there are six relationships related to the CEO characteristics and four referring to the organization.

To better analyze the common significant relationships, between both groups, it was built *Table 56* with a summary of the PLS-MGA analysis. So, pValues of each group of firms, and of one group versus the other, were used to check which coefficients differ significantly between these two groups.

There are significant differences between the groups of the PLS analysis when pValues of the difference between the groups are minor than 0.05 or when pValues of the difference are greater than 0.95 (Sarstedt *et al.*, 2011).

	p-Values Firms with less than 10 employees	p-Values Firms with more than 10 & 250 employees	Path Coefficients- diff (Firms with more than 10 & less than 250 employees - Firms with less than 10 employees)	p-Values Firms with more than 10 & less than 250 employees vs Firms with less than 10 employees
Entrepreneurial Culture -> Sharing	0,008	0,320	0,144	0,733
Extraversion -> Team Culture	0,005	0,346	0,032	0,410
Help&Trust -> Entrepreneurial Culture	0,009	0,254	0,004	0,508
Openness to Experience -> Entrepreneurial Culture	0,000	0,458	0,099	0,242

Table 56 – Summary of PLS-MGA Results

In this case, all the common relationships have pValues smaller than 0.95 and greater than 0.05, which means that there are no significant differences between the common variable relationships of these two groups of firms.

Therefore, none of the significant relationships presented significant differences from group to group, which means that those relationships did not vary according to the firm size, but only in the case of the variable relationships common to both groups.

As in general terms, it was observed that in smaller firms there are more CEO characteristics influencing the organizations, either their culture and their ability to establish internal cooperation networks, than in bigger firms. This means that firm size has impact on how CEO characteristics influence the organization, namely organizational culture and how this is reflected on the way employees develop relationships within the firm, and with stakeholders, and how the firm establishes informal cooperation networks.

5.4.3 Multi-Group Analysis of Firms with a TMT

The existence of a Top Management Team is another variable that influences the action of the CEO. According to the literature, the size and the composition of the TMT have impact on the CEO managerial discretion.

For this analysis, it was considered two groups of firms: one with more than one member in the TMT, and the other group of firms with only one member (the CEO) in the TMT.

Firms with a TMT

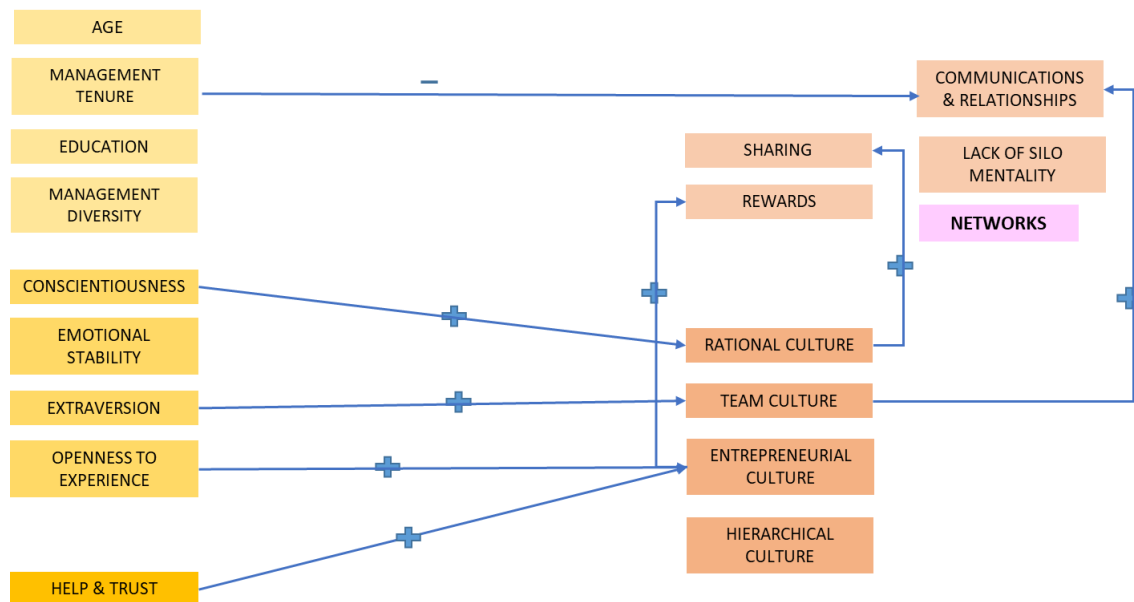
Using the model and the Partial Least Squares technique to the group of firms with more than one member in the Top Management Team, to verify which relationships were statistically significant, it was obtained a table with all the results, which can be found in Appendix F.

Considering the pvalues < 0.05, it was built a table with the most statistically significant relationships (*Table 58*).

Relationships	p- Values	Path Coefficients
Conscientiousness -> Rational culture_	0,000	0.187
Entrepreneurial Culture_ -> Rewards	0,000	0.611
Extraversion -> Team Culture	0,000	0.289
Help^Trust -> Entrepreneurial Culture_	0,000	0.142
Management Tenure -> Communications^Relationships	0.031	-0.346
Openness to Experience -> Entrepreneurial Culture_	0,000	0.632
Rational culture_ -> Sharing	0,000	0.387
Team Culture -> Communications^Relationships	0,000	0.711

Table 58 - Statistically Significant Relationships for a pvalue < 0.05, in firms with a TMT.

Using the most significant relationships in statistically terms, with pvalue < 0.05 the model was redesigned, and the result can be seen in *Figure 11*.



Source: SmartPLS

Figure 11 - Theoretical Framework with the statistically significant relationships for Firms with TMT.

In firms with TMT, CEO observable variables have little importance on the explanation of the model, for a significance level of 0.05, exception made for CEO Management Tenure. The longer tenured the CEO the less likely it is that the organization is seen as an active participant in the industry, and the more difficult it would be for employees to work with whoever it would be necessary to get the work done (Communications & Relationships). In this case, CEOs' Age, Education or Management Diversity have little influence in the organization when firms are managed by a TMT.

Again, what is evident is the influence of the CEO psychologic variables in Organizational Culture and therefore in Silo Effect, this is in its ability to create and develop informal collaboration networks.

Moreover, it can be said that in firms with TMT their ability to establish and maintain collaboration networks with either customers or suppliers to easily recover in case of being unable to work for a short period, or among employees who would work with whoever it would be necessary to get the job well done (Communications & Relationships) depends on the type of organizational culture, which in turn is highly influenced by CEOs' psychologic traits and social capital.

In this group of firms, the longer CEOs hold that position the less likely the organization is seen as playing an active role within the industry and less likely the employees work with whoever it is necessary to have the work well done, regardless any boundaries that might exist among departments and/or organizations (Communications & Relationships). So, less likely to create and develop informal cooperation networks within the firm and with other firms.

If CEOs are reliable, organized and responsible (Conscientiousness) more likely will the CEO be creating a culture focused in planning, productivity, efficiency and measurable outcomes (Rational Culture). This type of organizational culture tends to encourage the existence of information sharing and out-of-the-office activities, being tasks and responsibilities clearly defined (Sharing). So, indirectly a conscientious CEO will introduce information sharing and out-of-the-office activities, thus helping to develop internal networks, and reducing the existence of silos within the firm.

While a reliable CEO is more likely to create a Rational Culture, a sociable and talkative (Extraversion) CEO tends to create a culture where there is cohesion, mutual help,

autonomy, decentralization and team work (Team Culture), and more probable it is to encourage people to work with whoever it is necessary to get the job done and to have good relationships with customers and suppliers in case their collaboration is needed if any working problem arises (Communications & Relationships), thus creating a favorable environment to the creation of networks, not only within the firm, but also externally with their main stakeholders.

A more broadminded CEO, creative and imaginative (Openness to Experience) is more likely to create a flexible and creative organization, capable of responding quickly to changes in the environment and of pursuing growth and innovation, this is, a more Entrepreneurial Culture.

The more relatives, friends and colleagues' CEOs have and can trust and ask for help in case of need (Help&Trust), the more likely to create an Entrepreneurial Culture, and in turn an Entrepreneurial culture might lead to the existence of financial rewards for the department and organizational results (Rewards).

In firms with a TMT, it is noticeable that CEO observable characteristics have very little influence on the organizations, since CEO characteristics like Age, Education, Management Diversity were left out of the model, and CEO Management Tenure is the only CEO observable characteristic with impact in organizational Silo effect, this is in the ability of the CEO to influence the way employees create relationships among them, how the firm is seen within the industry and how the firm establishes relationships with external stakeholders (Communications & Relationships). While CEO psychologic variables and social capital have impact only in organizational culture, and it is the culture of the organization that influences the firm ability to create and develop or destroy the possibility of having collaboration networks within the firm. So, indirectly CEO psychologic variables and social capital may help firms to build collaboration networks using organizational culture.

Firms without TMT

Applying the model to the group of firms with only the CEO as TMT, and using the Partial Least Squares technique, it was obtained a table with all the bootstrapping results, which can be found in Appendix F.

Considering the pvalues < 0.05 , Table 59 was built with the statistically significant relationships.

Relationships	p-Values	Path Coefficients
Entrepreneurial Culture_ -> Rewards	0,000	0.611
Help^Trust -> Rational culture_	0.006	0.439
Openness to Experience -> Entrepreneurial Culture_	0,001	0,632
Openness to Experience -> Sharing	0,003	0,614
Openness to Experience -> Lack of Silo Mentality	0,021	0,512
Rational culture_ -> Sharing	0,045	0,387
Team Culture -> Communications^Relationships	0,000	0.711

Table 59 - Statistically Significant Relationships for pvalues < 0.05 , in firms with the CEO as TMT.

Using the significant relationships in statistically terms, with pvalue < 0.05 , the model was redesigned, as it can be seen on Figure 12.

In firms where the CEO is the TMT, where CEOs have greater managerial discretion, surprisingly there is very little influence of CEO characteristics in organizations, either in their cultures, either in their ability to develop internal collaboration networks (Silo effect). CEOs observable characteristics have no influence at all in the organization.

In fact, only CEOs openness to experience and social capital are shown to have impact on organizations. All the observable variables (Age, Education, Management Tenure, Management Diversity) were left out of the explanation of the model, therefore it might be said that CEO Age, Education, Management Tenure, Management Diversity are not relevant for the model. The same happened to all the psychologic dimensions, with exception of Openness to Experience, in fact a CEO open to new ideas and experiences seems to have a huge importance in firms managed by the CEO.

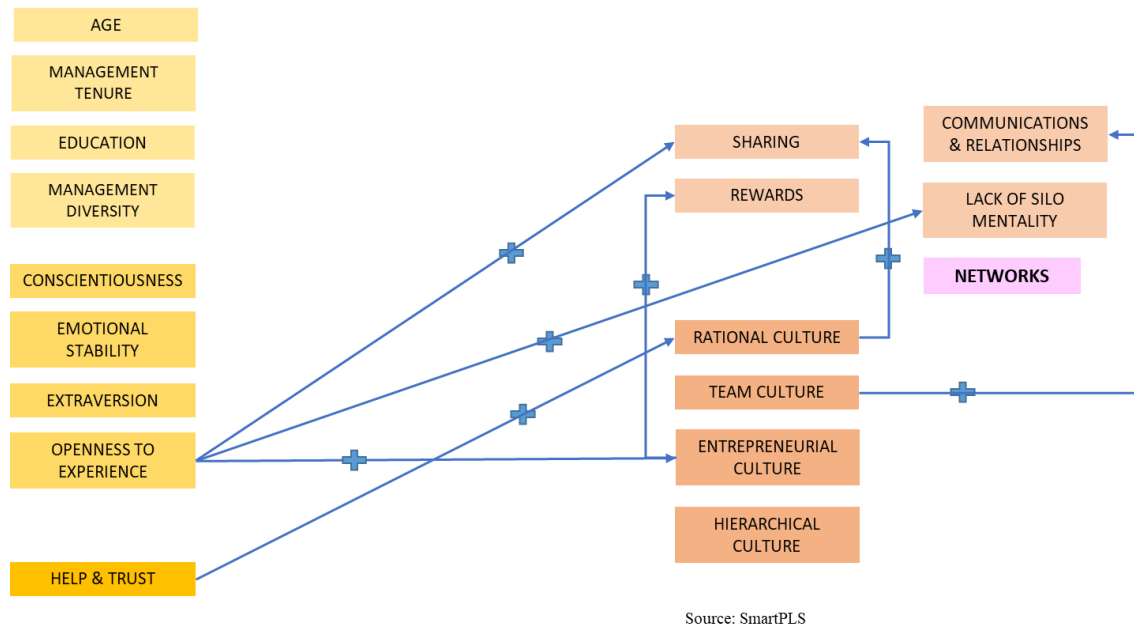


Figure 12 - Theoretical Framework with the statistically significant relationships for Firms with CEO as TMT

Like in previous groups analyzed, in this one it can also be observed the influence of Openness to Experience (a psychological variable) and of Help & Trust (Bonding Social Capital) in organizations with CEOs as TMT, in their Culture and Silo Effect.

The number of relatives, friends and colleagues in whom CEOs can trust and ask for help in case of need (Help&Trust) has an impact in organizational culture, being it possible to create a culture proxy of Rational. Indirectly, the wider the web of social relations of CEOs, greater is the number of measures promoting information sharing and of out-of-the-office activities encouraging teamworking spirit, and people to perform different activities within the organization and eliminating any working barriers that might exist, thus creating internal networks of cooperation (Sharing).

In firms where the TMT is the CEO, this might also happen the more open and creative is the CEO (Openness to Experience), since a CEO open to new ideas and experiences is also more motivated in encouraging activities that promote creativity and innovation (Sharing).

Being creative and open to new experiences and ideas (Openness to Experience) the more likely is the CEO to create an organizational culture close to Entrepreneurial, with a flexible structure, pursuing innovation, growth and entrepreneurship and responding to

the demands of external environment. This type of culture on the other hand may impact the organization silo by introducing financial rewards as a way of compensating for the firm or department results (Rewards).

An open-minded and creative CEO (Openness to Experience) is more likely to encourage people to do different activities within the organization to have experience, to have access to information, and reducing the number of both internal and external working barriers and developing a sense of team (Lack of Silo Mentality).

If firms with CEOs as TMT present an organizational culture similar to a Team Culture, then it is possible that the firm is seen as an active participant in the industry, with good relationships with their suppliers and customers, by developing their collaboration networks (Communications & Relationships).

When firms with CEOs as TMT present a Rational Culture then it is most likely that there are measures promoting information sharing among the departments, jointly out-of-the-office activities, tasks and responsibilities clearly defined (Sharing)

In this group of firms' it is noticeable that observable characteristics have no impact either in organizational culture, either in the firm ability to develop collaboration networks (Silo effect), revealing that what really matters when CEOs are in charge of the fate of the firm is their web of trustworthy contacts (friends, relatives, colleagues, ...) and their ability to be open-minded, creative and innovative.

Comparison

Comparing the significant relationships of the two groups of firms, one with TMT and the other with CEO as TMT, it was built Table , at a significance level of 0.05, with the significant relationships that both groups have in common: Entrepreneurial Culture – Rewards, Openness to Experience – Entrepreneurial Culture, Rational culture – Sharing and Team Culture – Communications and Relationships.

Analyzing the three significant relationships of the group of firms without TMT, not in common with the group of firms with TMT, it is evident that the more open-minded CEOs, the more likely they are to develop collaboration networks, using their relatives,

friends and colleagues in whom the CEO can trust. And, by creating a rational culture within the organization, the CEO would use measurable targets to be able to pursue efficiency and also to have the control over the organization, showing that decision-making process is centralized.

Firms without TMT	Firms with TMT
	Conscientiousness -> Rational culture_
Entrepreneurial Culture_ -> Rewards	Entrepreneurial Culture_ -> Rewards
	Extraversion -> Team Culture
	Help^Trust -> Entrepreneurial Culture_
Help^Trust -> Rational culture_	Management Tenure -> Communications^Relationships
Openness to Experience -> Entrepreneurial Culture_	Openness to Experience -> Entrepreneurial Culture_
Openness to Experience -> Sharing	
Openness to Experience -> Lack of Silo Mentality	
Rational culture_ -> Sharing	Rational culture_ -> Sharing
Team Culture -> Communications^Relationships	Team Culture -> Communications^Relationships

Table 60 - Relationships in common to both groups of firms for a significance level of 0.05

The four significant relationships (not in common) of the firms with TMT, reveal the importance of the psychological characteristics of the CEO in influencing organizational culture. If the firm has a reliable, organized and task-oriented CEO then the organizational culture would be rational. If the CEO is sociable, talkative and assertive then it is most likely to have a firm with a team culture.

In firms with TMT the number of relatives, friends and colleagues' CEOs can trust and ask for help in case of need is used to have access to a wide range of ideas and resources, so as to create an entrepreneurial culture in the organization.

The longer the tenure of the CEO, the less likely it is to have employees working with whoever it is necessary to have the work done, or the goal achieved as there might be imaginary or physical boundaries preventing people from working together, even the relationships with customers and suppliers might not be the best. Therefore, the longer

the CEO holds that position the more likely to create internal silos and inhibit the appearance of collaboration networks.

Moreover, to better comprehend the common significant relationships, between the two groups of firms, it was built *Table 61* with a summary of the PLS-MGA analysis. So, pValues of each group of firms, and of one group versus the other, were used to check which coefficients differ significantly between these two groups.

There are significant differences between the groups of the PLS analysis when pValues of the difference between the groups are smaller than 0.05 or when pValues of the difference are greater than 0.95 (Sarstedt *et al.*, 2011).

	p-Values Firms with CEO	p-Values Firms with TMT	Path Coefficients- diff (CEO - with TMT)	p-Value (CEO vs with TMT)
Entrepreneurial Culture_ -> Rewards	0,000	0,000	0.266	0.037
Openness to Experience -> Entrepreneurial Culture_	0.001	0,000	0.204	0.147
Rational culture_ -> Sharing	0.045	0,000	0.279	0.023
Team Culture -> Communications^Relationships	0,000	0,000	0.128	0.217

Table 61 – Summary of the PLS-MGA Results

In this case, there are no significant differences between the groups under analysis in two relationships they have in common: Openness to Experience - Entrepreneurial Culture and Team Culture – Communications & Relationships, since pvalues of the difference are greater than 0.05, but less than 0.95. Therefore, the influence of Openness to Experience in creating an Entrepreneurial Culture, and the influence of Team culture in the variable Communications & Relationships do not depend on the type of management of the firm. However, in the other two relationships the two groups have in common there are significant differences as pValues of the difference between the groups are smaller than 0.05. In the case of Entrepreneurial Culture – Rewards the pValue of the difference is 0.037 which is below 0.05, meaning that the influence of the variable entrepreneurial culture behaves differently in firms managed by only the CEO, or by a TMT. The same happens with the relationship Rational culture – Sharing, which exhibits a pValue of 0.023, a value smaller than 0.05, and thus revealing that the influence of a Rational culture

in creating and developing sharing activities depend on the type of management of the firm, whether the firm is managed by a TMT or a CEO only.

5.5 CONCLUSION

After all these analyzes, it is possible to draw some conclusions. Firstly, regarding the general model, it should be highlighted there is only one statistically significant relationship: Openness to Experience – Entrepreneurial Culture, which is common to all groups of firms. In fact, this conclusion reinforces the idea that CEOs with high score in Openness to Experience tend to pursue new ideas, processes and experiences (Gow *et al.*, 2016). An Entrepreneurial culture is considered an open system, flexible, favorable to creativity and innovation and risk taker (Kalliath *et al.*, 1999), which is a reflection of the CEO psychologic variable Openness to Experience. This means that CEOs more open to new ideas and experiences are more likely to create an Entrepreneurial culture in a firm regardless of the industry, the firm size and the existence of a TMT. In this case, the influence of this CEO characteristic (Openness to Experience) is not affected by the impact of the industry or the size of the firm nor by the existence of a TMT, beyond the CEO.

In general terms and summarizing the interpretations of all the groups of analysis, Table 62, provides a synthesis of the hypotheses tested and confirmed by the empirical research.

Observable variables were found to have direct influence in organizational silo effect, while psychological variables were more due to influence directly organizational culture, and then in turn culture produce effects in how firms build their collaboration networks (Silo effect) within the firm and informally with their customers and providers (Communications & Relationships), which is consistent with the idea that people's characteristics are "determinants of organizational behavior" (Schneider, 1987, p. 437).

Therefore, it can be said that CEO observable and psychological variables have impact on the organization, in both culture and in the firm ability to create and develop informal collaboration networks either internally or externally with customers and providers.

HYPOTHESES OF RESEARCH		✓ / ✗
Hypothesis 1a. – CEO observable characteristics have an impact on the organization		✓
Hypothesis 1b. - CEO psychological characteristics have an impact on the organization		✓
Hypothesis 1.c. - CEO social capital has an impact on the organization		✓
Hypothesis 2a. - CEO observable characteristics have an impact on formal Cooperation Networks		✗
Hypothesis 2b. – CEO psychological characteristics have an impact on formal Cooperation Networks		✗
Hypothesis 2c. CEO social capital has an impact on formal Cooperation Networks		✗
Hypothesis 3a. – Organizational culture has an impact on formal Cooperation Networks		✗
Hypothesis 3b. – Organizational silo effect has an impact on formal Cooperation Networks		✗
Hypothesis 4. – Organizational culture has an impact on the creation of silo effect		✓
Hypothesis 5. – Firm Size, TMT and Industry affect the influence of CEO characteristics in the organization and in establishing cooperation networks		✓

Table 62 - Summary of the research hypotheses

Moreover, it can be said that organizational culture influence the way employees build relationships among them and with the firm stakeholders to have their job done, in how the firm is seen within the industry and how encourages people to work with whoever it is necessary to accomplish their goals, how measures promoting information sharing are introduced and how out-of-the-office activities are organized (Silo effect). In fact, this is consistent with the idea of Helfrich *et al.* (2007), who found that organizational culture influences the way employees relate to each other, and how they look after new members, encouraging or inhibiting the sharing of knowledge or innovations.

Despite all this, there is no evidence of CEO characteristics and social capital or organizational culture and silo effect having impact on the firm ability to develop and maintain formal Collaboration Networks with complementors, competitors, customers-providers or universities, research centers or laboratories.

Moreover, it should also be mentioned that variables like CEO Emotional stability and Networks were not included in the analysis, in fact this occurred in all the Multi-Group analysis made, showing that it is not important if the CEO is emotionally stable or neurotic, and also, that in the group of firms under analysis the CEO personal characteristics and social capital have no influence in the firm ability to establish formal Networks.

Analyzing the effect of the industry in the influence of CEO characteristics it should be referred the importance of Education and Management Tenure in the Food, Beverage and Tobacco industries, while in the Accommodation and Catering Activities it is given more importance to the CEO Management Diversity and to the number of relatives, friends and colleagues the CEO can trust and ask for help if needed (Help & Trust), besides the psychological variables.

Also, in the Accommodation and Catering Activities, observable variables have no direct impact on the firm's ability to create and develop internal collaboration networks within the firm and with stakeholders (Silo Effect), while in the Food, Beverage and Tobacco industries, observable variables have effect on both organizational culture and silo effect. In fact, there is a greater influence of CEO characteristics in the latter sector than in the Accommodation industry, so it can be said that industry affect the influence of CEO characteristics in the organization and in establishing informal cooperation networks. However, this is not consistent with the idea that CEOs of firms belonging to industries with sustained growth tend to have greater managerial discretion (Hutzschenreuter & Kleindienst, 2013), as in this case it is in the most mature sector, the Food, Beverage and Tobacco where the influence of CEOs characteristics are most visible.

Assessing the effect of firm size in the impact of CEO characteristics, it can be said that observable variables are not very important in medium sized firms (with more than 10 and less than 250 employees) but are of great importance in small firms (with less than 10 employees). Actually, the influence of CEOs' characteristics is stronger in small firms than in medium sized firms. Both observable and psychological variables have impact not only in organizational culture, but also in the firm's ability to establish informal collaboration networks (Silo Effect) while in medium-sized firms it is the CEO psychological variables that influence the culture of the organization, which in turn is

reflected on how the employees develop relationships among them (Lack of Silo Mentality & Sharing), and in how the firm establish internal cooperation networks (Silo Effect). Therefore, it can be declared that firm size influenced the impact of CEO characteristics in the organization. In fact, this idea confirms previous research that argued that, larger the firm, the more difficult it is for the CEO to have influence in the decision-making process (Papadakis, 2006).

While in firms with a TMT, the number of years managers occupy the position (Management Tenure) influenced the relationship the firm had with suppliers and customers, the way the organization is seen within the industry and how employees work within the organization (Communications & Relationships), in firms managed only by the CEO there is no influence of CEOs observable characteristics. The longer tenured the CEO, the less likely the organization is seen as an active player in the industry, the less likely the suppliers and customers would help the firm in case of having working problems, and above all, the less probable the employees would work with whoever it would be necessary to have the work done (Communications & Relationships), which reinforces the idea of X. Luo *et al.* (2014) who found that CEO tenure is negatively related to firm-customer relationship strength. In both cases, the number of relatives, friends and colleagues a CEO can trust and ask for help has impact on organizational culture, since organizations are largely affected by social relations (Granovetter, 1985). The difference abides that in firms with TMT, it is more likely that the CEO social capital creates an Entrepreneurial culture within the firm, while in firms managed by the CEO, it is more likely the CEO creates organizations with Rational cultures.

Additionally, in firms with TMT all the CEO psychological variables are considered to have effect on organizational culture and then culture in turn influenced the firm ability to develop collaboration networks, in firms managed by the CEO only, not only the observable variables are neglected but also all the psychological characteristics are left out, except for the CEO psychological characteristic Openness to Experience. Therefore, in firms with CEOs only, their ability to be open to new ideas and experiences is of greater importance than in firms with TMT, since it influences not only organizational culture, but also how the employees create and develop relationships among them (Lack of Silo Mentality), how information is shared among departments and if tasks and responsibilities are clearly defined (Sharing).

While in firms with TMT, CEO psychological characteristics have impact on organizational culture, creating a Rational, a Team, or an Entrepreneurial Culture within the organization, which in turn have influence in Silo Effect, this is, in how employees develop relationships among them, and with the firm stakeholders, and in how the firm establish informal collaboration networks. Therefore, it can be stated that TMT affect the impact of CEO characteristics in the organization, in culture and silo effect, confirming the idea presented by Collins and Clark (2003) that TMTs are responsible for gathering and disseminating information across different employee groups and functional areas, playing a role in creating an effective internal network, or when relying on external sources of information to maximize their information gathering to provide their firms with an information advantage, thus creating an external network.

The variable formal Network was left out of the explanation in all the groups of firms, which means that although this variable was included in the model, in the groups under research it is not visible that CEO characteristics influence the establishment and management of formal external cooperation networks. In fact, the CEO does not seem to have great influence in creating external formal Collaboration Networks, however this research reveals that CEO characteristics have a huge influence in how the organization hinders or fosters the appearance of internal and external silos and in how firms relate to their stakeholders, at least informally. Already Ou *et al.* (2014) revealed that CEOs influence the attitudes and behaviors of employees and Finkelstein *et al.* (1996) defended that CEO characteristics have a great influence on firm since they are responsible for the firm's management.

Although the CEO personal characteristics used, do not have any influence in how organizations establish formal cooperation networks, it should be addressed the influence of CEO personal characteristics in building informal internal and external collaboration networks, developing activities capable of hindering the emergence of external and internal silos. This is corroborated by the importance of the variables Communications & Relationships and Silo Mentality (Lack of) for all the groups of firms being studied.

CONCLUSIONS

6 CONCLUSIONS

The goal of this research was to understand the impact of CEO characteristics (psychological, observable and social capital) on the firm's ability to establish and develop (formal and informal) networks with their stakeholders either directly or through their influence on organizational culture and silos.

Therefore, some hypotheses of research emerged, a theoretical model was developed, tested and the results were analyzed and discussed.

At this stage, it will be possible to reflect upon the results, strengths and limitations of the research. Contributions to knowledge, implications for practice and theory and of course some new paths of research shall also be addressed in this section.

6.1 GENERAL OVERVIEW

This research enriches the general understanding of how CEO characteristics influence the organization and their ability to establish cooperation networks, by discussing how the different CEO observable variables (Age, Formal Education, Management Diversity and Management Tenure) impact the culture and silo effect of the organization. Being this influence mediated by the size of the firm, as it is believed that the amount of CEO influence depends on the life cycle stage the firm is, the industry to which the firm belongs, as the context may influence the intensity of the effect of CEOs variables', and the Top Management Team, since their characteristics may limit the CEO managerial discretion and therefore condition the action of CEO characteristics.

This study's central hypotheses that CEO characteristics have an impact on organizational culture, on the creation of internal cooperation networks, and that CEO social capital has impact on organizational culture, and that culture has an impact in the creation of silo effect, were in general supported.

Firstly, the Big Five Framework turned out to be Big Four, as the scale used to assess the factor Agreeableness was not validated by the model. Those four psychological characteristics studied of CEOs had in fact influence on the organization, not only on

organizational culture, but also on silo effect, on the capacity of developing internal cooperation networks, teamwork, communication flow processes, and on rewards policy.

The observable variables in general (exception for firms with more than 10 and less than 250 employees) had impact on the organization, but above all in influencing the silo effect, the ability of firms allowing their employees to perform different tasks, in different departments, by creating multi-functional teams, rewarding the employees for the good results of the department or the organization, involving them in the vision of the firm, turning the firm in an important player in the industry. Probably the aim of the CEO with these policies is to overcome organizational silo mentality, as defended by Gulati (2007). By engaging in having homogeneous information, processes and activities so that employees can improve their focus (coordination), in motivating people to work together so as to pursue the same goals (cooperation), in ensuring that the organization has enough people with skills to maintain its market position (capability development), in involving people in the development of external relationships (connection). Thus, enhancing the probability of establishing cooperation networks external, but also internally.

However, formal education, in firms belonging to the Food, Beverage and Tobacco sector and in firms with less than 10 employees, had an impact on organizational culture, an inverse relationship with Hierarchical culture, higher the CEO level of education less likely it is to have a firm with formal procedures, rules and hierarchy, clear lines of authority. Moreover, CEO's with higher level of education are expected to deliver a wider range of creative solutions (Karami *et al.*, 2006) which is more compatible with entrepreneurial or team cultures and less with hierarchical cultures.

The effect of a greater social network is more evident in firms from the Accommodation and Catering activities sector, and in firms with more than 10 and less than 250 employees, where bonding social capital (Help & Trust) influence organizational culture, and culture have effect on silo effect, in the firms' ability to create informal cooperation networks, due to the influence of organizational culture in feeding an excellent team working spirit and knocking down any possible working barriers hiding people from working with each other, and with other organizations (Lack of Silo Mentality), and in promoting information sharing and jointly out of the office activities, and setting clear tasks and responsibilities (Sharing).

In firms with more than 10 and less than 250 employees, an organizational culture can be more innovative, creative (Entrepreneurial Culture), efficient, with measurable outcomes (Rational Culture) or with clear lines of authority (Hierarchical Culture) depending on the number of relatives and friends a CEO can trust and ask for help or advice (Help & Trust). Moreover, in all the groups of firms analyzed, social capital influenced the organizations, particularly, their culture, except for the case of firms from the Food, Beverage and Tobacco sector. Revealing that its influence is independent from the size and of having or not a TMT, but not from the sector dynamism. However, it was not found any evidence that CEO social capital has any effect on the organization ability to develop formal cooperation networks, with their stakeholders at least not directly. But, in terms of informal relationships there is strong evidence either directly, or indirectly. Directly, as in the case of the general model where social capital influences directly and positively the ability of the firm to encourage employees to move among different departments and to assume different functions within the organization, favouring the creation of a sense of belonging to a team, knocking down any potential working barriers that might exist among functional areas or other organizations (Lack of Silo Mentality) and the existence of measures promoting information sharing and jointly out-of-the-office activities and having tasks and responsibilities clearly defined (Sharing). Indirectly, as in the general model and in the other groups of firms, where CEO characteristics have impact on the firm ability to create and develop informal relationships but through organizational culture “which is a powerful means to elicit desired organizational outcomes” (Hogan & Coote, 2014, p. 1609).

No matter what the size of the firm, the industry, or if managed by a TMT or by the CEO alone, it was found strong evidence that organizational culture influences the ability of the firm developing informal internal collaborative networks. Entrepreneurial or Rational cultures are more likely to help members of the organization to develop internal networks, thus enhancing the source of knowledge, skills and capabilities of the organization. The CEO social capital is more likely to create Entrepreneurial cultures which in turn are more likely to introduce financial rewards for both department and organizational outcomes (Rewards), and more likely to introduce measures promoting information sharing among functional areas, jointly activities and clear definition of both tasks and responsibilities (Sharing), thus helping to develop informal relationships among the employees and

having access to their social network. When CEO social capital is more likely to create organizations with Rational cultures it is more likely to introduce measures promoting information and activities sharing, and tasks and responsibilities are clearly defined (Sharing) or people is encouraged to move among the different departments to gain experience, a sense of cohesion and of team work prevails and any potential working barriers are knocked down (Lack of Silo Mentality), fostering the existence of informal cooperation networks either internal, either externally.

Nevertheless, it was found some differences between firms in what concerns sector, size and CEO-TMT process. In firms from the Accommodation industry it was more common to have firms under the effect of CEO management diversity while in firms from the Food, Beverage and Tobacco sector the effect of CEO management tenure in the organization was more frequent. CEO education had greater influence in firms from the Food, Beverage and Tobacco sector, than in organizations it the Accommodation and Catering Activities industry. While in larger firms it could not be found any evidence of effect of CEO observable variables in the organization, in firms with less than 10 employees, CEOs' Age and Management Tenure had impact in organizational culture, but also in the firms' ability to create and develop informal networks, either internal and externally, as revealed by the construct "Communications & Relationships". Also, in smaller firms it was more frequent to find the firms' ability to build and sustain informal cooperation networks being influenced by reliable and responsible CEOs, than in larger firms.

In firms managed by a TMT, CEOs psychological characteristics had impact on organizational culture while in firms managed by the CEO alone the effect of CEO psychological variables was mainly on Silo effect.

Therefore, it can be said that industry, size and CEO-TMT management have influence in the effect of CEO variables in the firm ability to create and develop informal (internal and external) collaboration networks.

6.2 THEORETICAL IMPLICATIONS

Theoretically this research main contribution to knowledge is the combination of different theoretical frameworks and its empirical approach to test the importance of CEO characteristics on the organization and on its ability to develop cooperation networks.

This research provided the first theoretical review and empirical test of Hambrick's TMT moderating effect on CEO characteristics impact on the organization and on its ability to develop cooperation networks. In doing so, this study puts the CEO back in the Upper Echelon Theory by showing how TMT may limit or enhance the CEO managerial discretion and demonstrating that CEO personality traits and bonding social capital can shape organizational culture and internal cooperation networks (Silo Effect), and that observable characteristics affect the organization internal networks. Because CEOs attention allocation is influenced by the interaction with members of the firm, it was necessary to study how TMT influenced the allocation of attention of the CEOs. Additionally, industry and firm are situational characteristics that also affect CEO attention allocation and managerial discretion (Hutzschenreuter & Kleindienst, 2013).

The Upper Echelons Theory argues that organizations are a reflection of their top managers' (Hambrick & Mason, 1984) therefore the need to use the personal characteristics of the CEO to analyze which of them are more likely to have influence in the organizations.

This research provides empirical support of how personal traits impacts on organizational culture. And, how the number of acquaintances the CEO can trust and ask for help (Help & Trust) influences the type of organizational culture, confirming that social networks can provide important information to make the acquisition of resources easier (Dyer & Singh, 1998).

Previous research (Carpenter *et al.*, 2001; Finkelstein & Boyd, 1998) had already focused on how CEO characteristics alone impact organizations, however the greatest value of this study abides in the combination of different theoretical frameworks: Upper Echelons, Big Five Framework, Competing Values Framework, Silo effect to explain how the characteristics of the CEO influence the organizations more specifically their culture and

silos, and how they might help to establish formal and informal cooperation networks, either internal or external to the organization.

6.3 MANAGERIAL IMPLICATIONS

Practitioners could improve their understanding of which CEO personality trait suits best when organizational strategy includes the development or the management of cooperation networks (both internal and external), the change of organizational culture or reduction of silo effect within the organization.

Managers became also aware that team cultures within the organizations are more prone to lead to the creation of informal networks, since firms with team cultures tend to have people working with whoever it is necessary to have the work done, regardless of the boundaries that might exist among departments or firms, are more likely to have good relationships with their stakeholders and are usually seen as an active player within the industry (Communications & Relationships). Moreover, people are encouraged to move across the different departments, to play different roles within the firm, creating a good team working spirit, and overtaking any internal or external working barriers (Lack of Silo Mentality). For this to happen, the CEO needs to be sociable, talkative, assertive with energy, meaning extraverted. In other words, an extraverted CEO is more likely to develop a team culture within the organization and thus greater the probability of engaging either directly, either indirectly in informal collaboration networks with the firm stakeholders.

However, in large firms the establishment of informal networks occurs only through organizational culture, which is also common to firms without TMT, while in small firms the development of informal collaboration networks can be a result of CEO observable (Age and Management Tenure) and psychological variables (Conscientiousness).

If their aim is to create internal networks, even if informally, managers are now aware that they need to encourage people to circulate among the different functional areas and to assume different jobs within the organization to gain experience. The more team working spirit managers succeed in creating within the firm the more likely it is to have

any working barriers knocked down and consequently the easier it is to have internal cooperation networks among the employees, and with firm stakeholders. This is particularly true in large firms with more than 10 and less than 250 employees, in firms being managed by a CEO with a TMT or by a CEO only, and in firms belonging to both sectors: Accommodation and Food, Beverage and Tobacco.

In practice, managers are now aware that Extraverted CEOs are more likely to engage in informal (internal and external) networks whether directly or indirectly, by creating team cultures within the organizations. Additionally, firms with team cultures are more prone to lead to the creation of informal networks.

6.4 LIMITATIONS AND FUTURE RESEARCH

Like any other research, this one has several limitations. First, the sample was in the Accommodation and Catering Activities sector, and in the Food, Beverage and Tobacco sector, so results should not be generalized to service or industry settings. Therefore, further research must include other sectors before any generalization.

Secondly, the response rate among the contacted firms was low. Although it is unlikely that sample selection bias drove the results obtained, these should be replicated for more confident generalization. However, this is in line with previous research in the field that had used the same research methodology.

Thirdly, this research could further deepen the reason why in organizations with hierarchical cultures, this type of organizational culture has no impact on the creation of silo effect, when usually by definition in hierarchical cultures people tend to have the same job, sometimes in the same department, for a long time, working always with the same people, thus creating silos within the organization (Sy & Côté, 2004).

Fourthly, it could also be studied the mediated effect of some variables in the case of small firms, where it can be seen the double influence of psychologic variables (Extraversion and Openness to Experience) in Silo Effect (Silo Mentality and Rewards) and in Organizational culture (Team Culture and Entrepreneurial Culture), and of

Bonding Social Capital (Help & Trust) in Organizational culture (Entrepreneurial Culture).

Although there is strong evidence that CEOs are aware of the benefits of having internal networks, the effect of internal social capital should be further investigated, as it allows not only to enhance personal relationships but also establish a link to external resources and knowledge (Dess & Shaw, 2001). One possibility in future research is the use of the model of Nahapiet and Ghoshal (1998) that introduce how social capital can contribute to the creation of intellectual capital through three dimensions: structural, cognitive and relational for a better understanding of how social capital impacts organizational culture.

Another limitation of this work abides in the use of only four personal traits of the Big Five Framework as it was not possible to measure the influence of the construct Agreeableness with the scale used. Therefore, further research on this subject should be carried out.

Addressing these limitations is a worthwhile endeavor for future research. Other opportunities for future research exist as well. For example, additional process variables like firm ownership, firm business strategy, organizational structure, CEO management education, TMT composition, TMT size, family in the TMT, can be considered as potential moderators and mediators of the influence of CEO personal variables in the firm ability to develop and sustain collaboration networks.

Cooperation activities between industry and universities should also be explored in further detail to see which the most common form of collaboration between both entities is.

In future research, the impact of formal cooperation networks on firm performance should also be assessed, to help firms to see if their strategy of engaging in formal collaboration networks with other firms has any influence on firm performance.

Hopefully, the results of these research will stimulate further research on CEO personality traits, observable variables, social capital, CEO-TMT interface and cooperation networks.

In conclusion, this research succeeded in finding the answers to the questions presented in the Introduction section. So, it is now possible to state that a Team culture is more favorable to the creation of networks. CEO Openness to Experience, Extraversion and

Conscientiousness are the CEO personal traits more likely to have influence on organizational culture and on the firm. These CEO characteristics have impact in organizational culture regardless the industry, the size or the firm management. However, there are no significant differences among the variable relationships the three groups of firms have in common, except for the group of firms managed by the CEO only and those managed by the TMT. Since, in this case, there are significant differences between organizations with Rational cultures managed by the CEO only and firms with Rational cultures managed by the TMT in how they introduce information sharing and jointly out of the office activities and define clear tasks and responsibilities (Sharing), and also in how Entrepreneurial cultures reward both department and organizational results. Therefore, these two variable relationships are not independent of the firm type of management, meaning that it is the TMT that have a greater influence in the CEO ability to impact firms' organizational culture and their ability to build and sustain informal and formal (internal and external) collaboration networks.

APPENDICES

7 APPENDICES

APPENDIX A – SURVEY

Survey: P080.2018_Tese doutoramento CM

P080.2018_Tese doutoramento CM

Este inquérito é composto por dois grupos de questões: um relativo ao inquirido e outro relativo à empresa onde exerce atividade.

Nome da empresa:

O seu nome:

Email:

Secção A: CARACTERÍSTICAS DO INDIVÍDUO

Indique por favor

*** A1. Qual a função que desempenha?**

☐ Gerente

☐ Sócio-Gerente

☐ Diretor Geral

☐ Administrador

☐ Sem cargo atribuído, mas com poder de decisão

☐ Outra função. Qual?

*** A2. Idade**

*** A3. Sexo**

☐ Feminino

☐ Masculino

*** A4. Grau de escolaridade completo mais elevado**

☐ 4º Ano

☐ 6º Ano

☐ 9º Ano

☐ 12º Ano

☐ Bacharelato

- ☐ Licenciatura
- ☐ Mestrado
- ☐ Doutoramento

*** A5. Área de Educação e Formação**

- ☐ Programas e qualificações genéricas
- ☐ Educação
- ☐ Artes e humanidades
- ☐ Ciências sociais, jornalismo e informação
- ☐ Economia, gestão, administração e direito
- ☐ Ciências naturais, matemática e estatística
- ☐ Tecnologias da informação e da comunicação (ICTs)
- ☐ Engenharia, manufatura e construção
- ☐ Agricultura, floresta, pescas e veterinária
- ☐ Saúde e bem estar
- ☐ Serviços
- ☐ Outra área. Qual?

*** A6. Número de anos que trabalha nesta empresa**

*** A7. Número de anos que trabalha esta indústria**

*** A8. O setor de atividade no qual desenvolveu a sua experiência profissional anterior**

- ☐ Atividades de Alojamento e Restauração
- ☐ Indústrias Alimentar, Bebidas e Tabaco
- ☐ Outra Atividade na Indústria
- ☐ Outra Atividade nos Serviços
- ☐ Sem experiência profissional anterior a esta

* A9. Número de anos que desempenha a função atual, nesta empresa.

* A10. Área funcional na qual adquiriu maior experiência profissional antes de assumir a atual função na empresa.

- ☐ Sem experiência anterior
- ☐ Comercial/ Vendas
- ☐ Financeira
- ☐ Marketing
- ☐ Produção
- ☐ Recursos Humanos
- ☐ Outra área. Qual?

* A11. Foi um dos elementos fundadores da empresa

- ☐ Sim
- ☐ Não

A12. Considerando a escala de 1 a 7, em que 1 equivale a pouco disperso e 7 a muito disperso, indique o grau de dispersão do capital da empresa:

	1	2	3	4	5	6	7
* Capital Social da Empresa	☐	☐	☐	☐	☐	☐	☐

* A13. Tem alguma participação no capital social da empresa.

- ☐ Sim
- ☐ Não

* A14. Qual a sua participação no capital social da empresa em termos percentuais (%)?

A15. Indique o seu grau de concordância (considerando a escala de 1 a 7, em que 1 é discordo completamente e 7 concordo completamente) com as afirmações que se seguem, e que começam com "Vejo-me como alguém que ...

	1	2	3	4	5	6	7
* ... é original, tem ideias novas.	☐	☐	☐	☐	☐	☐	☐
* ... valoriza experiências artísticas.	☐	☐	☐	☐	☐	☐	☐
* ... tem uma imaginação ativa.	☐	☐	☐	☐	☐	☐	☐

* ... faz um trabalho minucioso.	☐	☐	☐	☐	☐	☐	☐
* ... faz coisas de forma eficaz e eficiente.	☐	☐	☐	☐	☐	☐	☐
* ... tem tendência para ser preguiçoso.	☐	☐	☐	☐	☐	☐	☐
* ... é comunicativo, falador.	☐	☐	☐	☐	☐	☐	☐
* ... é extrovertido, sociável.	☐	☐	☐	☐	☐	☐	☐
* ... é reservado.	☐	☐	☐	☐	☐	☐	☐
* ... tem facilidade em perdoar.	☐	☐	☐	☐	☐	☐	☐
* ... é atencioso e amável com os outros.	☐	☐	☐	☐	☐	☐	☐
* ... é, por vezes, um pouco rude com os outros.	☐	☐	☐	☐	☐	☐	☐
* ... preocupa-se bastante.	☐	☐	☐	☐	☐	☐	☐
* ... fica nervoso facilmente.	☐	☐	☐	☐	☐	☐	☐
* ... é relaxado, lida bem com o stress.	☐	☐	☐	☐	☐	☐	☐

A16. Responda às seguintes questões, considerando a escala de 1 a 7, em que 1 equivale a Poucos e 7 equivale a Muitos:

	1	2	3	4	5	6	7
* Quantos amigos tem?	☐	☐	☐	☐	☐	☐	☐
* Quantos colegas/companheiros de escola tem?	☐	☐	☐	☐	☐	☐	☐
* De todos os seus amigos, em quantos pode confiar?	☐	☐	☐	☐	☐	☐	☐
* De todos os seus colegas, em quantos pode confiar?	☐	☐	☐	☐	☐	☐	☐
* De todos os seus familiares, em quantos pode confiar?	☐	☐	☐	☐	☐	☐	☐
* De todos os seus familiares, vizinhos, amigos, colegas de trabalho, ex-colegas de escola, quantos têm ligações entre si?	☐	☐	☐	☐	☐	☐	☐
* De todos os seus familiares, vizinhos, amigos, colegas de trabalho, ex-colegas de escola, quantos têm uma profissão?	☐	☐	☐	☐	☐	☐	☐
* De todos os seus colegas, quantos o iriam ajudar, caso solicitasse ajuda?	☐	☐	☐	☐	☐	☐	☐
* De todos os seus amigos, quantos o iriam ajudar, caso solicitasse ajuda?	☐	☐	☐	☐	☐	☐	☐

A17. Responda às seguintes questões, considerando a escala de 1 a 7, em que 1 equivale a Nenhum e 7 equivale a Muitos.

	1	2	3	4	5	6	7
* Quantas organizações/grupos culturais, recreativos e de lazer existem na sua comunidade?	☐	☐	☐	☐	☐	☐	☐
* Quantas organizações/grupos governamentais, políticos, económicos e sociais existem na sua comunidade?	☐	☐	☐	☐	☐	☐	☐

* Quantos desses grupos e organizações possuem amplas ligações sociais?	☐	☐	☐	☐	☐	☐	☐
* Quantos desses grupos e organizações possuem grande influência social?	☐	☐	☐	☐	☐	☐	☐
* Quantos desses grupos/organizações culturais, recreativas e de lazer representam os seus interesses?	☐	☐	☐	☐	☐	☐	☐
* Quantos desses grupos/organizações governamentais, políticas, económicas e sociais representam os seus interesses?	☐	☐	☐	☐	☐	☐	☐
* Quantos desses grupos/organizações governamentais, políticas, económicas e sociais o ajudariam caso solicitasse ajuda?	☐	☐	☐	☐	☐	☐	☐
* Quantos desses grupos/organizações culturais, recreativas e de lazer o ajudariam caso solicitasse ajuda?	☐	☐	☐	☐	☐	☐	☐

Secção B: CARACTERÍSTICAS DA EMPRESA

Indique por favor:

* B1. Em termos jurídicos, qual a forma societária da empresa?

- ☐ Empresário em Nome Individual
- ☐ Sociedade por Quotas
- ☐ Sociedade Anónima
- ☐ Sociedade em Comandita
- ☐ Sociedade em Nome Coletivo
- ☐ Cooperativa
- ☐ Estabelecimento Individual de Responsabilidade Limitada
- ☐ Sociedade Unipessoal por Quotas

* B2. Indique o número de colaboradores

Recomendação Comissão Europeia 2003/361

- ☐ Menos de 10 trabalhadores
- ☐ Entre 10 e 50 trabalhadores
- ☐ Mais de 50 e menos de 250 trabalhadores
- ☐ Mais de 250 trabalhadores

* B3. Indique o Volume de Negócios (no último ano fiscal):

Recomendação da Comissão Europeia 2003/361

- ☐ Superior a 50 Milhões de Euros.

- ☐ Superior a 10, mas Igual ou Inferior a 50 Milhões de Euros.
- ☐ Superior a 2, mas Igual ou Inferior a 10 Milhões de Euros.
- ☐ Igual ou Inferior a 2 Milhões de Euros.

*** B4. Setor de Atividade da Empresa**

Nomenclatura estatística das atividades económicas na Comunidade europeia, Rev.2 (NACE Rev.2)

- ☐ Indústrias Alimentares, Bebidas e Tabaco
- ☐ Atividades de Alojamento

*** B5. A empresa pertence ou está inserida em algum grupo?**

- ☐ Sim
- ☐ Não

*** B6. Considera que a empresa é uma empresa familiar?**

- ☐ Sim
- ☐ Não

*** B7. Quantos elementos constituem a equipa de gestão da empresa.**

*** B8. Há membros da família na gestão da empresa?**

- ☐ Sim
- ☐ Não

*** Quantos?**

B9. Indique, o seu grau de concordância com as afirmações que se seguem, tendo em consideração a escala de 1 a 7 (em que 1 é discordo completamente e 7 concordo plenamente).

	1	2	3	4	5	6	7
* A minha empresa é muito dinâmica e empreendedora. As pessoas estão dispostas a arriscar e a assumir riscos.	☐	☐	☐	☐	☐	☐	☐
* A minha empresa é um lugar muito formal e estruturado. Os procedimentos burocráticos geralmente determinam o que as pessoas fazem.	☐	☐	☐	☐	☐	☐	☐
* Os gestores da minha empresa são acolhedores e preocupados. Eles preocupam-se em desenvolver o potencial dos trabalhadores e atuam como guias ou mentores.	☐	☐	☐	☐	☐	☐	☐
* Os gestores da minha empresa são propensos a assumir							

riscos. Eles encorajam os trabalhadores a assumir riscos e a ser inovadores.	☐	☐	☐	☐	☐	☐	☐
* Os gestores da minha empresa são cumpridores de regras. Eles esperam que os trabalhadores sigam as regras, as políticas e os procedimentos estabelecidos.	☐	☐	☐	☐	☐	☐	☐
* Os gestores da minha empresa são coordenadores e orientadores. Eles ajudam os trabalhadores a alcançarem as metas e os objetivos da organização.	☐	☐	☐	☐	☐	☐	☐
* A lealdade e a tradição têm um efeito aglutinador na minha empresa. O grau de compromisso para com a empresa é elevado.	☐	☐	☐	☐	☐	☐	☐
* O compromisso e o desenvolvimento são os elementos aglutinadores da minha empresa. Há ênfase em ser o primeiro.	☐	☐	☐	☐	☐	☐	☐
* As regras e as políticas formais são o elemento aglutinador na minha empresa. Os indivíduos sentem que é importante seguir as regras.	☐	☐	☐	☐	☐	☐	☐
* O foco nas tarefas e no alcance de objetivos são o elemento aglutinador da minha empresa. A orientação para a produção é partilhada por todos.	☐	☐	☐	☐	☐	☐	☐
* A minha empresa foca-se no crescimento e na aquisição de novos recursos. A prontidão para abraçar novos desafios é importante.	☐	☐	☐	☐	☐	☐	☐
* A minha empresa foca-se nos recursos humanos. O moral e a elevada coesão na organização são importantes.	☐	☐	☐	☐	☐	☐	☐
* A minha empresa foca-se na permanência e na estabilidade. Manter as coisas é importante.	☐	☐	☐	☐	☐	☐	☐
* A minha empresa foca-se em ações competitivas e na concretização. É importante a existência de metas mensuráveis.	☐	☐	☐	☐	☐	☐	☐
B10. Indique, o seu grau de concordância com as afirmações que se seguem, tendo em consideração a escala de 1 a 7 (em que 1 é discordo completamente e 7 concordo plenamente), considerando a frase: "Na empresa onde trabalho..."							
	1	2	3	4	5	6	7
* Existem medidas que incentivam a partilha de informação entre departamentos.	☐	☐	☐	☐	☐	☐	☐
* Cada departamento/secção funciona de forma autónoma.	☐	☐	☐	☐	☐	☐	☐
* Os departamentos/secções são interdependentes.	☐	☐	☐	☐	☐	☐	☐
* É frequente existirem atividades extra-laborais conjuntas.	☐	☐	☐	☐	☐	☐	☐
* As tarefas estão adequadamente definidas e atribuídas.	☐	☐	☐	☐	☐	☐	☐
* As responsabilidades estão devidamente definidas.	☐	☐	☐	☐	☐	☐	☐
* Cada departamento/secção tem a sua própria cultura.	☐	☐	☐	☐	☐	☐	☐
* Existem recompensas financeiras pelos resultados do departamento/secção.	☐	☐	☐	☐	☐	☐	☐
* Existem recompensas financeiras pelos resultados da organização.	☐	☐	☐	☐	☐	☐	☐

* As pessoas são encorajadas a circularem entre diferentes departamentos ou a desempenhar diferentes funções no seio da organização, para ganhar experiência.	☐	☐	☐	☐	☐	☐	☐
	1	2	3	4	5	6	7
* Existe um excelente espírito de equipa e de camaradagem na nossa organização.	☐	☐	☐	☐	☐	☐	☐
* É importante que não existam barreiras que nos impeçam de trabalhar bem uns com os outros.	☐	☐	☐	☐	☐	☐	☐
* É importante que não existam barreiras que nos impeçam de trabalhar bem com outras organizações.	☐	☐	☐	☐	☐	☐	☐
* A organização é vista como sendo uma participante ativa na indústria e nos grupos setoriais.	☐	☐	☐	☐	☐	☐	☐
* As pessoas trabalham com quem quer que seja necessário para terem o trabalho bem feito, independentemente das fronteiras entre departamentos ou organizações.	☐	☐	☐	☐	☐	☐	☐
* A relação que temos com os fornecedores e clientes ajudar-nos-ia a recuperar rapidamente, caso a organização estivesse impossibilitada de trabalhar durante 3 meses.	☐	☐	☐	☐	☐	☐	☐

B11. A empresa tem alguma aliança estratégica (formal/informal) com uma empresa que oferece um produto/serviço complementar ao seu?

- ☐ Sim
- ☐ Não

B12. Tendo em consideração a escala de 1 a 7, em que 1 é nada importante e 7 equivale a extremamente importante, indique o grau de importância dessa aliança para a sua empresa, em termos de:

	1	2	3	4	5	6	7
* Estratégia.	☐	☐	☐	☐	☐	☐	☐
* Acesso a recursos.	☐	☐	☐	☐	☐	☐	☐
* Acesso a mercados.	☐	☐	☐	☐	☐	☐	☐
* Partilha de conhecimento.	☐	☐	☐	☐	☐	☐	☐

B13. A empresa tem alguma aliança estratégica (formal/informal) com uma empresa que oferece um produto/serviço concorrente ao seu?

- ☐ Sim
- ☐ Não

B14. Tendo em consideração a escala de 1 a 7, em que 1 é nada importante e o 7 equivale a extremamente importante, indique o grau de importância dessa aliança para a sua empresa, em termos de:

	1	2	3	4	5	6	7
* Estratégia.	☐	☐	☐	☐	☐	☐	☐
* Acesso a recursos.	☐	☐	☐	☐	☐	☐	☐

* Acesso a mercados.	☐	☐	☐	☐	☐	☐	☐
* Partilha de conhecimento.	☐	☐	☐	☐	☐	☐	☐

B15. A empresa tem alguma aliança estratégica (formal/informal) com uma empresa cliente/fornecedora?

- ☐ Sim
- ☐ Não

B16. Tendo em consideração a escala de 1 a 7, em que 1 é nada importante e 7 equivale a extremamente importante, indique o grau de importância dessa aliança para a sua empresa, em termos de:

	1	2	3	4	5	6	7
* Estratégia.	☐	☐	☐	☐	☐	☐	☐
* Acesso a recursos.	☐	☐	☐	☐	☐	☐	☐
* Acesso a mercados.	☐	☐	☐	☐	☐	☐	☐
* Partilha de conhecimento.	☐	☐	☐	☐	☐	☐	☐

B17. A empresa tem alguma aliança estratégica (formal/informal) com um Centro de Investigação/Laboratório/Universidade?

- ☐ Sim
- ☐ Não

B18. Tendo em consideração a escala de 1 a 7, em que 1 é nada importante e 7 equivale a extremamente importante, indique o grau de importância dessa aliança para a sua empresa, em termos de:

	1	2	3	4	5	6	7
* Estratégia.	☐	☐	☐	☐	☐	☐	☐
* Acesso a recursos.	☐	☐	☐	☐	☐	☐	☐
* Acesso a mercados.	☐	☐	☐	☐	☐	☐	☐
* Partilha de conhecimento.	☐	☐	☐	☐	☐	☐	☐

B19. Comparando com outras empresas concorrentes, com uma dimensão semelhante, numa escala de 1 a 7, em que 1 é muito abaixo da média e 7 muito acima da média, avalie:

	1	2	3	4	5	6	7
* Desempenho da empresa	☐	☐	☐	☐	☐	☐	☐

B20. Comparando com outras empresas que desenvolvem a mesma atividade, como avalia a sua empresa nos últimos 3 anos, numa escala de 1 a 7, em que 1 é muito abaixo da média e 7 muito acima da média, em termos de:

	1	2	3	4	5	6	7
* Desempenho financeiro da empresa	☐	☐	☐	☐	☐	☐	☐

B21. Indique o valor (aproximado) dos seguintes indicadores de performance financeira da sua empresa no último ano fiscal:

Rentabilidade do Ativo (ROA)

€

Rentabilidade da Participação Social (ROE)

€

Lucro Antes de Proveitos Financeiros (EBIT)

€

Muito obrigada pela disponibilidade e pelo tempo despendido no preenchimento deste inquérito.

Para finalizar carregue no botão concluir.

APPENDIX B – TABLE OF CONSTRUCTS

Construct	DEE					Demographic Characteristics				Psychological Variables / Personality Characteristics				Personal Social Capital			TMT			Non-Technical Skills				Cultural Competing Values Framework			SES Effect Characteristics		Network Characteristics		
	Entrepreneurial Potential	Entrepreneurial Intent	Entrepreneurial Behavior	Entrepreneurial Success	Entrepreneurial Failure	Age	Gender (Male/Female)	Ethnicity	Education Level	Entrepreneurial Potential	Entrepreneurial Intent	Entrepreneurial Behavior	Entrepreneurial Success	Entrepreneurial Failure	Trust	Building	Relating	Non-Technical Skills	Teamwork	Problem Solving	Communication	Leadership	Teamwork	Problem Solving	Communication	Leadership	Teamwork	Problem Solving	Communication	Leadership	
Entrepreneurial Potential	1																														
Entrepreneurial Intent	0.78	1																													
Entrepreneurial Behavior	0.78	0.78	1																												
Entrepreneurial Success	0.78	0.78	0.78	1																											
Entrepreneurial Failure	0.78	0.78	0.78	0.78	1																										
Entrepreneurial Potential	0.78	0.78	0.78	0.78	0.78	1																									
Entrepreneurial Intent	0.78	0.78	0.78	0.78	0.78	0.78	1																								
Entrepreneurial Behavior	0.78	0.78	0.78	0.78	0.78	0.78	0.78	1																							
Entrepreneurial Success	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	1																						
Entrepreneurial Failure	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	1																					
Entrepreneurial Potential	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	1																				
Entrepreneurial Intent	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	1																			
Entrepreneurial Behavior	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	1																		
Entrepreneurial Success	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	1																	
Entrepreneurial Failure	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	1																
Entrepreneurial Potential	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	1															
Entrepreneurial Intent	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	1														
Entrepreneurial Behavior	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	1													
Entrepreneurial Success	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	1												
Entrepreneurial Failure	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	1											
Entrepreneurial Potential	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	1										
Entrepreneurial Intent	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	1									
Entrepreneurial Behavior	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	1								
Entrepreneurial Success	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	1							
Entrepreneurial Failure	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	1						
Entrepreneurial Potential	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	1					
Entrepreneurial Intent	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	1				
Entrepreneurial Behavior	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	1			
Entrepreneurial Success	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	1		
Entrepreneurial Failure	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0															

APPENDIX C – MODEL BOOTSRAPPING RESULTS’ TABLE

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Age -> Communications and Relationships	0,190	0,195	0,085	2,218	0,027
Age -> Entrepreneurial Culture	-0,017	-0,011	0,067	0,255	0,799
Age -> Hierarchical Culture	0,050	0,059	0,086	0,582	0,561
Age -> Networks	0,115	0,067	0,122	0,946	0,345
Age -> Rational Culture_	0,054	0,058	0,077	0,700	0,484
Age -> Rewards	-0,065	-0,063	0,086	0,753	0,452
Age -> Sharing	0,081	0,084	0,078	1,033	0,302
Age -> Silo Mentality	0,127	0,127	0,084	1,516	0,130
Age -> Team Culture	0,045	0,046	0,076	0,593	0,554
Bridging -> Communications and Relationships	0,054	0,068	0,053	1,025	0,306
Bridging -> Entrepreneurial Culture	0,047	0,061	0,077	0,610	0,542
Bridging -> Hierarchical Culture	0,076	0,089	0,102	0,743	0,458
Bridging -> Networks	0,141	0,170	0,165	0,853	0,394
Bridging -> Rational Culture_	0,050	0,073	0,095	0,522	0,602
Bridging -> Rewards	0,007	0,014	0,036	0,188	0,851
Bridging -> Sharing	0,038	0,053	0,059	0,646	0,518
Bridging -> Silo Mentality	0,044	0,052	0,048	0,908	0,364
Bridging -> Team Culture	0,116	0,126	0,085	1,357	0,175
Communications and Relationships -> Networks	0,017	-0,038	0,193	0,088	0,930
Conscientiousness -> Communications and Relationships	0,174	0,174	0,093	1,863	0,063
Conscientiousness -> Networks	0,027	0,030	0,159	0,169	0,866
Conscientiousness -> Rational Culture_	0,356	0,352	0,086	4,137	0,000
Conscientiousness -> Rewards	0,121	0,119	0,108	1,126	0,261
Conscientiousness -> Sharing	0,178	0,183	0,088	2,020	0,044
Conscientiousness -> Silo Mentality	0,052	0,061	0,097	0,536	0,592
Education -> Communications and Relationships	-0,127	-0,119	0,071	1,807	0,071
Education -> Entrepreneurial Culture	-0,029	-0,029	0,072	0,401	0,689
Education -> Hierarchical Culture	-0,162	-0,161	0,085	1,912	0,057
Education -> Networks	0,051	0,039	0,067	0,752	0,452
Education -> Rational Culture_	-0,079	-0,077	0,087	0,904	0,366
Education -> Rewards	-0,050	-0,051	0,081	0,611	0,542
Education -> Sharing	-0,014	-0,016	0,079	0,177	0,859
Education -> Silo Mentality	-0,030	-0,029	0,086	0,353	0,724
Education -> Team Culture	-0,024	-0,023	0,080	0,300	0,765
Emotional Stability -> Communications and Relationships	-0,107	-0,105	0,065	1,653	0,099
Emotional Stability -> Entrepreneurial Culture	-0,109	-0,110	0,075	1,456	0,146
Emotional Stability -> Networks	0,198	0,165	0,131	1,519	0,129

Emotional Stability -> Rewards	-0,077	-0,077	0,105	0,729	0,466
Emotional Stability -> Sharing	-0,008	-0,007	0,056	0,135	0,893
Emotional Stability -> Silo Mentality	-0,008	-0,011	0,064	0,128	0,898
Entrepreneurial Culture -> Communications and Relationships	-0,036	-0,034	0,126	0,287	0,775
Entrepreneurial Culture -> Networks	0,257	0,045	0,407	0,632	0,528
Entrepreneurial Culture -> Rewards	0,370	0,364	0,146	2,538	0,011
Entrepreneurial Culture -> Sharing	0,379	0,360	0,113	3,363	0,001
Entrepreneurial Culture -> Silo Mentality	0,148	0,134	0,131	1,135	0,257
Extraversion -> Communications and Relationships	0,196	0,199	0,083	2,357	0,019
Extraversion -> Networks	0,002	-0,013	0,123	0,016	0,987
Extraversion -> Rewards	0,024	0,019	0,092	0,261	0,794
Extraversion -> Sharing	0,020	0,022	0,083	0,234	0,815
Extraversion -> Silo Mentality	0,195	0,202	0,085	2,308	0,021
Extraversion -> Team Culture	0,343	0,335	0,076	4,504	0,000
Help&Trust -> Communications and Relationships	0,087	0,089	0,052	1,682	0,093
Help&Trust -> Entrepreneurial Culture	0,227	0,224	0,066	3,455	0,001
Help&Trust -> Hierarchical Culture	0,167	0,175	0,100	1,664	0,097
Help&Trust -> Networks	-0,042	-0,071	0,175	0,239	0,811
Help&Trust -> Rational Culture_	0,175	0,175	0,085	2,069	0,039
Help&Trust -> Rewards	0,074	0,065	0,040	1,842	0,066
Help&Trust -> Sharing	0,153	0,149	0,049	3,101	0,002
Help&Trust -> Silo Mentality	0,095	0,092	0,043	2,190	0,029
Help&Trust -> Team Culture	0,137	0,142	0,072	1,892	0,059
Hierarchical Culture -> Communications and Relationships	0,013	0,012	0,093	0,139	0,889
Hierarchical Culture -> Networks	-0,237	-0,149	0,192	1,235	0,217
Hierarchical Culture -> Rewards	-0,122	-0,111	0,125	0,977	0,329
Hierarchical Culture -> Sharing	0,058	0,057	0,078	0,748	0,455
Hierarchical Culture -> Silo Mentality	-0,099	-0,104	0,083	1,201	0,230
Management Tenure -> Communications and Relationships	-0,213	-0,208	0,090	2,355	0,019
Management Tenure -> Entrepreneurial Culture	0,043	0,041	0,079	0,539	0,590
Management Tenure -> Hierarchical Culture	-0,104	-0,105	0,090	1,151	0,250
Management Tenure -> Networks	-0,142	-0,085	0,116	1,225	0,221
Management Tenure -> Rational Culture_	-0,052	-0,048	0,091	0,576	0,565
Management Tenure -> Rewards	0,052	0,053	0,097	0,542	0,588
Management Tenure -> Sharing	-0,075	-0,070	0,100	0,754	0,451
Management Tenure -> Silo Mentality	-0,173	-0,168	0,096	1,804	0,072
Management Tenure -> Team Culture	0,040	0,040	0,081	0,493	0,622
Management diversity -> Communications and Relationships	-0,020	-0,019	0,071	0,279	0,780
Management diversity -> Entrepreneurial Culture	0,040	0,041	0,070	0,569	0,569
Management diversity -> Hierarchical Culture	-0,022	-0,028	0,074	0,298	0,766
Management diversity -> Networks	-0,058	-0,019	0,137	0,422	0,673
Management diversity -> Rational Culture_	0,102	0,106	0,076	1,341	0,181
Management diversity -> Rewards	0,050	0,058	0,082	0,604	0,546
Management diversity -> Sharing	0,037	0,041	0,071	0,517	0,606
Management diversity -> Silo Mentality	-0,059	-0,054	0,070	0,847	0,398

Management diversity -> Team Culture	0,067	0,065	0,072	0,933	0,351
Openness to Experience -> Communications and Relationships	0,007	0,010	0,081	0,091	0,928
Openness to Experience -> Entrepreneurial Culture	0,426	0,424	0,070	6,065	0,000
Openness to Experience -> Networks	0,120	0,077	0,126	0,955	0,340
Openness to Experience -> Rewards	0,131	0,132	0,110	1,198	0,232
Openness to Experience -> Sharing	0,255	0,249	0,083	3,064	0,002
Openness to Experience -> Silo Mentality	0,195	0,188	0,081	2,412	0,016
Rational Culture_ -> Communications and Relationships	0,246	0,248	0,140	1,756	0,080
Rational Culture_ -> Networks	0,195	0,103	0,268	0,729	0,466
Rational Culture_ -> Rewards	0,101	0,096	0,147	0,688	0,492
Rational Culture_ -> Sharing	0,336	0,338	0,112	2,993	0,003
Rational Culture_ -> Silo Mentality	0,225	0,225	0,110	2,041	0,042
Relationships -> Communications and Relationships	0,016	0,024	0,055	0,290	0,772
Relationships -> Entrepreneurial Culture	0,047	0,060	0,076	0,613	0,540
Relationships -> Hierarchical Culture	0,094	0,097	0,103	0,911	0,363
Relationships -> Networks	-0,021	0,004	0,115	0,184	0,854
Relationships -> Rational Culture_	-0,003	0,007	0,109	0,032	0,975
Relationships -> Rewards	0,003	0,011	0,036	0,081	0,936
Relationships -> Sharing	0,022	0,033	0,061	0,358	0,721
Relationships -> Silo Mentality	0,010	0,015	0,050	0,203	0,839
Relationships -> Team Culture	0,047	0,062	0,095	0,493	0,622
Sharing -> Networks	-0,224	-0,152	0,180	1,239	0,216
Silo Mentality -> Networks	0,065	0,056	0,249	0,259	0,796
Team Culture -> Communications and Relationships	0,369	0,360	0,137	2,696	0,007
Team Culture -> Networks	-0,114	0,047	0,346	0,328	0,743
Team Culture -> Rewards	-0,055	-0,060	0,153	0,362	0,718
Team Culture -> Sharing	-0,007	0,003	0,141	0,051	0,959
Team Culture -> Silo Mentality	0,284	0,289	0,134	2,113	0,035

APPENDIX D – INDUSTRY BOOTSRAPPING RESULTS’ TABLE

	Path Coefficients Original (Food, Beverages, Tobacco)	Path Coefficients Original (Accommodation)	Path Coefficients Mean (Food, Beverages and Tobacco)	Path Coefficients Mean (Accommodation)	STDEV (Food, Beverage and Tobacco)	STDEV (Accommodation)	t- Values (Food, Beverage and Tobacco)	t-Values (Accommodation)	p- Values (Food, Beverage and Tobacco)	p-Values (Accommodation)
Age -> Communications and Relationships	0,127	0,144	0,134	0,146	0,117	0,092	1,080	1,562	0,281	0,119
Age -> Entrepreneurial Culture	0,030	-0,055	0,024	-0,049	0,118	0,087	0,254	0,629	0,799	0,530
Age -> Hierarchical Culture	0,089	0,008	0,071	0,022	0,164	0,097	0,541	0,079	0,589	0,937
Age -> Networks	0,004	-0,071	0,015	0,064	0,207	0,206	0,019	0,345	0,985	0,730
Age -> Rational Culture_	0,305	-0,068	0,294	-0,061	0,132	0,096	2,308	0,707	0,021	0,480
Age -> Rewards	-0,035	-0,033	-0,031	-0,036	0,162	0,101	0,218	0,321	0,828	0,748
Age -> Sharing	0,023	0,041	0,017	0,046	0,081	0,078	0,279	0,529	0,780	0,597
Age -> Silo Mentality	0,130	-0,027	0,138	-0,017	0,108	0,096	1,209	0,280	0,227	0,780
Age -> Team Culture	0,156	0,010	0,146	0,014	0,127	0,093	1,228	0,107	0,220	0,915
Bridging -> Entrepreneurial Culture	0,262	-0,025	0,244	0,003	0,141	0,119	1,851	0,210	0,065	0,834
Bridging -> Hierarchical Culture	0,104	0,106	0,107	0,119	0,171	0,144	0,606	0,734	0,545	0,463
Bridging -> Networks	0,242	0,231	0,100	0,053	0,247	0,249	0,982	0,925	0,327	0,355
Bridging -> Rational Culture_	0,114	0,127	0,117	0,135	0,154	0,131	0,738	0,970	0,461	0,332
Bridging -> Team Culture	0,186	0,162	0,177	0,166	0,155	0,161	1,202	1,009	0,230	0,313
Communications and Relationships -> Networks	-0,341	0,233	-0,137	0,093	0,325	0,264	1,048	0,883	0,295	0,378
Conscientiousness -> Communications and Relationships	0,101	0,136	0,102	0,156	0,088	0,113	1,148	1,201	0,251	0,231
Conscientiousness -> Networks	0,061	0,173	0,039	-0,022	0,161	0,228	0,380	0,758	0,704	0,449
Conscientiousness -> Rational Culture_	0,329	0,425	0,334	0,412	0,103	0,118	3,202	3,608	0,001	0,000
Conscientiousness -> Rewards	0,058	0,092	0,054	0,101	0,125	0,134	0,466	0,685	0,641	0,493
Conscientiousness -> Sharing	-0,025	0,186	-0,019	0,190	0,075	0,100	0,341	1,859	0,733	0,064
Conscientiousness -> Silo Mentality	-0,060	0,097	-0,048	0,094	0,081	0,131	0,741	0,741	0,459	0,459
Education -> Communications and Relationships	-0,200	-0,033	-0,184	-0,021	0,099	0,098	2,027	0,331	0,043	0,741
Education -> Entrepreneurial Culture	-0,056	-0,026	-0,024	-0,013	0,118	0,092	0,476	0,283	0,634	0,778
Education -> Hierarchical Culture	-0,351	-0,018	-0,322	-0,020	0,134	0,109	2,623	0,163	0,009	0,871
Education -> Networks	-0,071	0,113	0,060	-0,050	0,223	0,156	0,320	0,725	0,749	0,469
Education -> Rational Culture_	-0,177	0,080	-0,148	0,091	0,137	0,107	1,287	0,753	0,199	0,452
Education -> Rewards	-0,076	-0,012	-0,061	-0,011	0,127	0,103	0,599	0,115	0,549	0,909
Education -> Sharing	0,040	0,039	0,039	0,038	0,073	0,077	0,551	0,509	0,582	0,611

Education -> Silo Mentality	-0,016	-0,002	-0,001	-0,004	0,091	0,111	0,171	0,022	0,864	0,983
Education -> Team Culture	0,029	-0,021	0,062	-0,011	0,130	0,092	0,225	0,228	0,822	0,820
Emotional Stability -> Communications and Relationships	-0,119	-0,121	-0,120	-0,115	0,088	0,118	1,349	1,018	0,178	0,309
Emotional Stability -> Entrepreneurial Culture	0,028	-0,187	0,000	-0,181	0,105	0,100	0,268	1,874	0,789	0,062
Emotional Stability -> Networks	0,292	0,122	0,118	0,109	0,229	0,204	1,276	0,596	0,203	0,551
Emotional Stability -> Rewards	-0,160	0,087	-0,167	0,088	0,138	0,149	1,161	0,585	0,246	0,559
Emotional Stability -> Sharing	-0,018	0,046	-0,022	0,040	0,072	0,086	0,251	0,534	0,802	0,594
Emotional Stability -> Silo Mentality	-0,025	0,014	-0,021	0,011	0,081	0,115	0,309	0,124	0,758	0,901
Entrepreneurial Culture -> Communications and Relationships	0,056	-0,101	0,047	-0,094	0,177	0,156	0,314	0,649	0,754	0,516
Entrepreneurial Culture -> Networks	-0,289	0,325	-0,169	0,269	0,471	0,402	0,614	0,808	0,539	0,420
Entrepreneurial Culture -> Rewards	0,579	0,316	0,584	0,294	0,280	0,176	2,065	1,792	0,039	0,074
Entrepreneurial Culture -> Sharing	0,311	0,395	0,284	0,365	0,152	0,179	2,041	2,205	0,042	0,028
Entrepreneurial Culture -> Silo Mentality	-0,073	0,331	-0,059	0,301	0,180	0,197	0,407	1,680	0,684	0,094
Extraversion -> Communications and Relationships	-0,041	0,138	-0,023	0,140	0,093	0,102	0,440	1,354	0,660	0,176
Extraversion -> Networks	-0,345	0,007	-0,146	0,099	0,262	0,198	1,320	0,038	0,188	0,970
Extraversion -> Rewards	0,016	0,065	0,026	0,052	0,141	0,123	0,113	0,528	0,910	0,598
Extraversion -> Sharing	0,093	-0,066	0,089	-0,058	0,079	0,099	1,181	0,661	0,238	0,509
Extraversion -> Silo Mentality	0,027	0,134	0,040	0,153	0,106	0,122	0,257	1,098	0,798	0,273
Extraversion -> Team Culture	0,416	0,291	0,406	0,278	0,106	0,115	3,913	2,542	0,000	0,011
Help&Trust -> Entrepreneurial Culture	0,203	0,215	0,186	0,224	0,111	0,105	1,836	2,045	0,067	0,041
Help&Trust -> Hierarchical Culture	0,198	0,142	0,192	0,155	0,121	0,161	1,636	0,878	0,102	0,380
Help&Trust -> Networks	0,044	-0,315	-0,032	-0,060	0,172	0,286	0,257	1,101	0,797	0,272
Help&Trust -> Rational Culture	0,143	0,237	0,126	0,225	0,130	0,116	1,101	2,040	0,272	0,042
Help&Trust -> Team Culture	0,134	0,111	0,125	0,121	0,116	0,105	1,152	1,059	0,250	0,290
Hierarchical Culture -> Communications and Relationships	-0,001	-0,060	0,007	-0,063	0,149	0,133	0,008	0,452	0,994	0,651
Hierarchical Culture -> Networks	-0,114	-0,029	-0,303	-0,152	0,360	0,224	0,318	0,128	0,751	0,898
Hierarchical Culture -> Rewards	-0,119	-0,116	-0,131	-0,092	0,187	0,176	0,635	0,658	0,526	0,511
Hierarchical Culture -> Sharing	-0,030	0,100	-0,023	0,093	0,125	0,107	0,239	0,937	0,812	0,349
Hierarchical Culture -> Silo Mentality	-0,002	-0,280	-0,010	-0,254	0,153	0,130	0,013	2,159	0,989	0,031
Management Tenure -> Communications and Relationships	-0,285	-0,044	-0,282	-0,038	0,126	0,085	2,263	0,519	0,024	0,604
Management Tenure -> Entrepreneurial Culture	-0,008	0,067	0,017	0,059	0,133	0,088	0,061	0,760	0,951	0,447
Management Tenure -> Hierarchical Culture	-0,235	0,009	-0,197	-0,009	0,164	0,121	1,431	0,077	0,153	0,939
Management Tenure -> Networks	-0,241	0,076	-0,105	-0,073	0,258	0,164	0,934	0,463	0,351	0,644

Management Tenure - -> Rational Culture_	-0,308	0,072	-0,273	0,050	0,159	0,094	1,939	0,763	0,053	0,446
Management Tenure - -> Rewards	0,026	0,024	0,031	0,033	0,139	0,121	0,187	0,196	0,851	0,845
Management Tenure - -> Sharing	-0,076	0,027	-0,067	0,026	0,092	0,074	0,821	0,363	0,412	0,717
Management Tenure - -> Silo Mentality	-0,276	0,092	-0,271	0,078	0,107	0,100	2,579	0,911	0,010	0,363
Management Tenure - -> Team Culture	0,015	0,001	0,040	-0,009	0,151	0,102	0,102	0,014	0,919	0,989
Management diversity -> Communications and Relationships	-0,050	-0,036	-0,063	-0,040	0,072	0,077	0,684	0,468	0,494	0,640
Management diversity -> Entrepreneurial Culture	0,015	0,019	0,021	0,020	0,098	0,095	0,155	0,196	0,876	0,845
Management diversity -> Hierarchical Culture	0,027	-0,038	0,041	-0,047	0,110	0,110	0,245	0,346	0,806	0,730
Management diversity -> Networks	-0,114	0,048	-0,032	-0,037	0,163	0,190	0,697	0,251	0,486	0,802
Management diversity -> Rational Culture_	-0,095	0,273	-0,077	0,253	0,111	0,088	0,853	3,105	0,394	0,002
Management diversity -> Rewards	0,044	0,060	0,052	0,075	0,106	0,123	0,417	0,487	0,677	0,627
Management diversity -> Sharing	0,018	0,023	0,018	0,022	0,061	0,084	0,292	0,274	0,771	0,784
Management diversity -> Silo Mentality	-0,051	-0,106	-0,053	-0,100	0,076	0,105	0,672	1,012	0,502	0,312
Management diversity -> Team Culture	-0,072	0,180	-0,059	0,162	0,098	0,102	0,732	1,763	0,464	0,079
Openness to Experience -> Communications and Relationships	-0,028	0,143	-0,032	0,136	0,093	0,121	0,305	1,179	0,761	0,239
Openness to Experience -> Entrepreneurial Culture	0,359	0,458	0,357	0,444	0,088	0,121	4,083	3,781	0,000	0,000
Openness to Experience -> Networks	0,152	0,041	0,194	-0,021	0,227	0,207	0,669	0,196	0,504	0,845
Openness to Experience -> Rewards	0,136	-0,177	0,133	-0,177	0,128	0,170	1,062	1,039	0,289	0,299
Openness to Experience -> Sharing	0,097	0,080	0,101	0,062	0,072	0,107	1,339	0,743	0,181	0,458
Openness to Experience -> Silo Mentality	0,162	0,142	0,158	0,131	0,093	0,142	1,739	1,000	0,083	0,318
Rational Culture_ -> Communications and Relationships	0,417	0,061	0,389	0,084	0,174	0,191	2,395	0,318	0,017	0,751
Rational Culture_ -> Networks	-0,046	0,314	0,318	0,075	0,520	0,506	0,089	0,621	0,929	0,535
Rational Culture_ -> Rewards	0,114	0,108	0,113	0,124	0,251	0,203	0,454	0,533	0,650	0,594
Rational Culture_ -> Sharing	0,246	0,427	0,252	0,436	0,131	0,171	1,875	2,498	0,061	0,013
Rational Culture_ -> Silo Mentality	0,311	0,135	0,311	0,121	0,176	0,217	1,772	0,625	0,077	0,532
Relationships -> Entrepreneurial Culture	0,070	-0,011	0,106	0,001	0,130	0,104	0,538	0,103	0,591	0,918
Relationships -> Hierarchical Culture	0,048	0,123	0,073	0,142	0,138	0,163	0,348	0,755	0,728	0,451
Relationships -> Networks	0,024	0,130	0,073	0,028	0,179	0,198	0,135	0,653	0,893	0,514
Relationships -> Rational Culture_	0,011	-0,084	0,047	-0,055	0,146	0,127	0,074	0,663	0,941	0,508
Relationships -> Team Culture	0,002	0,116	0,039	0,134	0,151	0,126	0,013	0,925	0,990	0,356
Sharing -> Networks	-0,319	-0,282	-0,158	-0,104	0,333	0,293	0,958	0,964	0,339	0,336
Silo Mentality -> Networks	0,297	-0,094	0,045	-0,058	0,358	0,375	0,832	0,252	0,406	0,801
Team Culture -> Communications and Relationships	0,231	0,488	0,246	0,466	0,207	0,175	1,116	2,789	0,265	0,005

Team Culture -> Networks	0,771	-0,353	0,328	-0,128	0,560	0,412	1,376	0,857	0,169	0,392
Team Culture -> Rewards	-0,334	0,109	-0,353	0,105	0,300	0,210	1,114	0,521	0,266	0,602
Team Culture -> Sharing	0,282	-0,227	0,288	-0,191	0,166	0,180	1,698	1,260	0,090	0,208
Team Culture -> Silo Mentality	0,436	0,178	0,410	0,191	0,193	0,239	2,259	0,745	0,024	0,457

APPENDIX E – FIRM SIZE (NUMBER OF EMPLOYEES) BOOTSRAPPING RESULTS’ TABLE

	Path Coeffi cients Origin al (Mais de 10 e menos 250 Trab)	Path Coeffici ents Original (Menos de 10 Trabalh adores)	Path Coeffi cient s Mean (Mais de 10 e meno s 250 Trab)	Path Coeffi cients Mean (Meno s de 10 Trabal hador es)	STDE V (Mais de 10 e menos 250 Trab)	STDE V (Men os de 10 Traba lhado res)	t- Value s (Mais de 10 e meno s 250 Trab)	t- Value s (Meno s de 10 Trabal hador es)	p- Value s (Mais de 10 e meno s 250 Trab)	p- Values (Menos de 10 Trabalh adores)
Age -> Communications and Relationships	0,076	0,275	0,091	0,271	0,104	0,105	0,736	2,625	0,462	0,009
Age -> Entrepreneurial Culture	0,081	-0,116	0,070	-0,110	0,097	0,094	0,837	1,236	0,403	0,217
Age -> Hierarchical Culture	0,167	-0,098	0,166	-0,094	0,140	0,100	1,187	0,974	0,236	0,331
Age -> Networks	0,140	0,053	0,126	0,025	0,164	0,267	0,850	0,198	0,396	0,843
Age -> Rational Culture_	0,232	-0,116	0,228	-0,100	0,124	0,105	1,882	1,102	0,060	0,271
Age -> Rewards	-0,054	-0,069	-0,062	-0,063	0,125	0,109	0,431	0,631	0,667	0,528
Age -> Sharing	0,117	-0,061	0,116	-0,048	0,074	0,095	1,583	0,639	0,114	0,523
Age -> Silo Mentality	0,079	0,073	0,076	0,081	0,094	0,099	0,839	0,740	0,402	0,460
Age -> Team Culture	0,175	-0,074	0,170	-0,063	0,116	0,091	1,501	0,814	0,134	0,416
Bridging -> Entrepreneurial Culture	0,075	0,032	0,094	0,053	0,110	0,114	0,681	0,278	0,496	0,781
Bridging -> Hierarchical Culture	0,124	0,086	0,125	0,106	0,132	0,153	0,935	0,563	0,350	0,574
Bridging -> Networks	0,056	0,384	0,088	0,100	0,171	0,357	0,326	1,073	0,744	0,284
Bridging -> Rational Culture_	0,217	-0,009	0,205	0,027	0,119	0,138	1,818	0,069	0,070	0,945
Bridging -> Team Culture	0,162	0,111	0,169	0,129	0,119	0,126	1,364	0,877	0,173	0,381
Communications and Relationships -> Networks	-0,305	0,238	-0,165	-0,008	0,298	0,336	1,024	0,709	0,306	0,478
Conscientiousness -> Communications and Relationships	-0,028	0,220	-0,016	0,219	0,110	0,096	0,257	2,303	0,797	0,022
Conscientiousness -> Networks	-0,004	0,003	0,002	0,030	0,176	0,165	0,023	0,018	0,982	0,986
Conscientiousness -> Rational Culture	0,455	0,222	0,436	0,229	0,111	0,135	4,088	1,650	0,000	0,100
Conscientiousness -> Rewards	0,203	0,042	0,227	0,002	0,137	0,125	1,479	0,337	0,140	0,736
Conscientiousness -> Sharing	-0,068	0,202	-0,063	0,225	0,070	0,113	0,972	1,789	0,331	0,074
Conscientiousness -> Silo Mentality	-0,031	-0,028	-0,007	-0,030	0,111	0,121	0,283	0,235	0,778	0,814
Education -> Communications and Relationships	-0,061	-0,086	-0,057	-0,070	0,094	0,080	0,649	1,082	0,516	0,280
Education -> Entrepreneurial Culture	-0,004	-0,101	0,012	-0,099	0,105	0,111	0,035	0,911	0,972	0,362
Education -> Hierarchical Culture	-0,096	-0,283	-0,088	-0,277	0,141	0,101	0,683	2,802	0,495	0,005
Education -> Networks	0,053	0,242	0,071	0,036	0,155	0,196	0,341	1,235	0,734	0,218
Education -> Rational Culture_	-0,073	-0,137	-0,058	-0,121	0,129	0,117	0,561	1,175	0,575	0,241
Education -> Rewards	-0,168	-0,002	-0,168	0,001	0,117	0,113	1,439	0,017	0,151	0,986
Education -> Sharing	0,080	-0,011	0,085	-0,015	0,069	0,089	1,166	0,124	0,244	0,901
Education -> Silo Mentality	-0,017	-0,006	-0,008	-0,025	0,095	0,106	0,181	0,055	0,857	0,956
Education -> Team Culture	0,026	-0,107	0,032	-0,103	0,119	0,106	0,218	1,008	0,827	0,314
Emotional Stability -> Communications and Relationships	-0,179	-0,038	-0,173	-0,027	0,091	0,095	1,954	0,401	0,051	0,689
Emotional Stability -> Entrepreneurial Culture	-0,079	-0,125	-0,078	-0,126	0,112	0,105	0,704	1,189	0,482	0,235
Emotional Stability -> Networks	0,367	0,195	0,258	0,024	0,194	0,253	1,890	0,769	0,059	0,442

Emotional Stability -> Rewards	0,059	-0,171	0,042	-0,154	0,121	0,152	0,487	1,121	0,626	0,263
Emotional Stability -> Sharing	-0,089	0,105	-0,091	0,093	0,077	0,078	1,163	1,342	0,245	0,180
Emotional Stability -> Silo Mentality	-0,068	0,065	-0,071	0,039	0,087	0,099	0,776	0,653	0,438	0,514
Entrepreneurial Culture -> Communications and Relationships	0,235	-0,256	0,245	-0,237	0,212	0,147	1,107	1,747	0,269	0,081
Entrepreneurial Culture -> Networks	0,125	-0,405	0,259	-0,036	0,501	0,455	0,249	0,890	0,803	0,374
Entrepreneurial Culture -> Rewards	0,519	0,293	0,487	0,292	0,221	0,175	2,347	1,671	0,019	0,095
Entrepreneurial Culture -> Sharing	0,320	0,464	0,307	0,425	0,160	0,174	1,999	2,660	0,046	0,008
Entrepreneurial Culture -> Silo Mentality	0,182	0,137	0,186	0,118	0,191	0,229	0,954	0,597	0,341	0,551
Extraversion -> Communications and Relationships	0,067	0,126	0,081	0,122	0,099	0,101	0,676	1,251	0,499	0,211
Extraversion -> Networks	-0,313	-0,116	-0,130	0,003	0,299	0,207	1,047	0,560	0,295	0,576
Extraversion -> Rewards	-0,002	0,103	-0,012	0,096	0,129	0,141	0,014	0,732	0,989	0,464
Extraversion -> Sharing	0,008	-0,006	0,011	-0,008	0,083	0,101	0,093	0,057	0,926	0,955
Extraversion -> Silo Mentality	0,133	0,047	0,139	0,076	0,096	0,127	1,387	0,369	0,166	0,713
Extraversion -> Team Culture	0,346	0,314	0,326	0,311	0,099	0,111	3,507	2,817	0,000	0,005
Help&Trust -> Entrepreneurial Culture	0,254	0,258	0,251	0,269	0,115	0,099	2,218	2,613	0,027	0,009
Help&Trust -> Hierarchical Culture	0,294	0,137	0,308	0,147	0,141	0,126	2,080	1,089	0,038	0,277
Help&Trust -> Networks	0,101	-0,344	0,051	-0,148	0,186	0,287	0,545	1,196	0,586	0,232
Help&Trust -> Rational Culture_	0,232	0,152	0,240	0,146	0,127	0,138	1,834	1,102	0,067	0,271
Help&Trust -> Team Culture	0,255	0,110	0,264	0,128	0,120	0,109	2,123	1,004	0,034	0,316
Hierarchical Culture -> Communications and Relationships	0,131	-0,021	0,131	-0,019	0,173	0,122	0,759	0,176	0,448	0,860
Hierarchical Culture -> Networks	0,204	0,154	0,042	-0,049	0,388	0,262	0,526	0,586	0,599	0,558
Hierarchical Culture -> Rewards	-0,179	-0,106	-0,166	-0,075	0,173	0,193	1,032	0,549	0,303	0,584
Hierarchical Culture -> Sharing	0,127	0,067	0,138	0,059	0,112	0,111	1,128	0,604	0,260	0,546
Hierarchical Culture -> Silo Mentality	-0,054	-0,112	-0,067	-0,100	0,137	0,135	0,395	0,831	0,693	0,407
Management Tenure -> Communications and Relationships	-0,177	-0,207	-0,168	-0,204	0,130	0,089	1,363	2,321	0,173	0,021
Management Tenure -> Entrepreneurial Culture	-0,033	0,160	-0,029	0,162	0,123	0,102	0,272	1,572	0,786	0,117
Management Tenure -> Hierarchical Culture	-0,204	0,132	-0,199	0,125	0,162	0,121	1,261	1,093	0,208	0,275
Management Tenure -> Networks	-0,217	0,120	-0,197	-0,009	0,186	0,187	1,170	0,643	0,243	0,520
Management Tenure -> Rational Culture_	-0,198	0,144	-0,192	0,135	0,147	0,118	1,342	1,224	0,180	0,222
Management Tenure -> Rewards	-0,153	0,240	-0,138	0,226	0,132	0,119	1,157	2,005	0,248	0,045
Management Tenure -> Sharing	-0,155	0,114	-0,140	0,107	0,104	0,085	1,488	1,345	0,138	0,179
Management Tenure -> Silo Mentality	-0,252	-0,027	-0,238	-0,042	0,115	0,106	2,199	0,254	0,028	0,799
Management Tenure -> Team Culture	-0,069	0,204	-0,076	0,197	0,139	0,102	0,499	2,000	0,618	0,046
Management diversity -> Communications and Relationships	-0,053	-0,050	-0,055	-0,060	0,079	0,082	0,667	0,612	0,505	0,541
Management diversity -> Entrepreneurial Culture	-0,029	0,157	-0,035	0,158	0,083	0,092	0,347	1,707	0,729	0,088
Management diversity -> Hierarchical Culture	-0,065	0,045	-0,062	0,039	0,097	0,113	0,669	0,397	0,504	0,692
Management diversity -> Networks	-0,067	0,263	-0,077	0,048	0,128	0,234	0,524	1,125	0,600	0,261
Management diversity -> Rational Culture_	0,086	0,127	0,070	0,129	0,086	0,117	1,002	1,082	0,317	0,280
Management diversity -> Rewards	0,058	0,007	0,065	0,017	0,113	0,115	0,511	0,062	0,610	0,950
Management diversity -> Sharing	-0,037	-0,026	-0,042	-0,027	0,058	0,074	0,636	0,353	0,525	0,725
Management diversity -> Silo Mentality	-0,086	-0,187	-0,082	-0,181	0,076	0,095	1,126	1,964	0,261	0,050
Management diversity -> Team Culture	0,012	0,157	0,003	0,157	0,084	0,113	0,139	1,387	0,889	0,166

Openness to Experience -> Communications and Relationships	-0,033	0,020	-0,019	0,021	0,128	0,099	0,260	0,203	0,795	0,839
Openness to Experience -> Entrepreneurial Culture	0,458	0,360	0,439	0,356	0,111	0,089	4,138	4,028	0,000	0,000
Openness to Experience -> Networks	0,180	0,160	0,097	0,087	0,250	0,216	0,719	0,740	0,472	0,460
Openness to Experience -> Rewards	-0,242	0,166	-0,229	0,169	0,143	0,142	1,691	1,169	0,092	0,243
Openness to Experience -> Sharing	0,047	0,138	0,041	0,124	0,092	0,102	0,512	1,355	0,609	0,176
Openness to Experience -> Silo Mentality	-0,087	0,336	-0,095	0,321	0,109	0,118	0,797	2,846	0,426	0,005
Rational Culture_ -> Communications and Relationships	0,014	0,491	-0,012	0,480	0,258	0,165	0,055	2,970	0,956	0,003
Rational Culture_ -> Networks	-0,292	0,336	-0,269	0,162	0,377	0,453	0,774	0,741	0,439	0,459
Rational Culture_ -> Rewards	0,093	0,074	0,087	0,081	0,228	0,226	0,406	0,328	0,685	0,743
Rational Culture_ -> Sharing	0,365	0,183	0,336	0,194	0,185	0,151	1,975	1,213	0,049	0,226
Rational Culture_ -> Silo Mentality	0,111	0,300	0,110	0,308	0,191	0,177	0,580	1,697	0,562	0,090
Relationships -> Entrepreneurial Culture	-0,016	0,135	0,009	0,123	0,134	0,104	0,118	1,301	0,906	0,194
Relationships -> Hierarchical Culture	-0,066	0,238	-0,028	0,229	0,149	0,125	0,442	1,902	0,659	0,058
Relationships -> Networks	0,189	0,101	0,061	0,042	0,235	0,181	0,803	0,557	0,422	0,578
Relationships -> Rational Culture_	-0,116	0,135	-0,072	0,125	0,126	0,147	0,915	0,919	0,360	0,358
Relationships -> Team Culture	-0,071	0,182	-0,031	0,177	0,137	0,120	0,519	1,518	0,604	0,130
Sharing -> Networks	-0,227	0,035	-0,095	-0,106	0,254	0,249	0,892	0,141	0,373	0,888
Silo Mentality -> Networks	0,438	-0,240	0,116	0,022	0,398	0,373	1,100	0,644	0,272	0,520
Team Culture -> Communications and Relationships	0,307	0,328	0,294	0,324	0,215	0,182	1,426	1,808	0,155	0,071
Team Culture -> Networks	0,094	-0,004	0,053	0,019	0,461	0,335	0,205	0,012	0,838	0,990
Team Culture -> Rewards	-0,018	-0,153	-0,017	-0,158	0,230	0,270	0,079	0,566	0,937	0,571
Team Culture -> Sharing	0,033	-0,041	0,064	-0,024	0,188	0,223	0,178	0,186	0,859	0,853
Team Culture -> Silo Mentality	0,423	0,148	0,411	0,130	0,183	0,255	2,316	0,582	0,021	0,561

APPENDIX F – FIRMS WITH CEO AND/OR TMT BOOTSTRAPPING RESULTS' TABLE

	Path Coefficients Original (CEO)	Path Coefficients Original (Com TMT)	Path Coefficients Mean (CEO)	Path Coefficients Mean (Com TMT)	STDEV (CEO)	STDEV (Com TMT)	t- Values (CEO)	t- Values (Com TMT)	p- Values (CEO)	p- Values (Com TMT)
Age -> Communications^Relationships	0,185	0,142	0,175	0,139	0,209	0,072	0,886	1,958	0,376	0,051
Conscientiousness -> Rational culture_	0,187	0,384	0,176	0,387	0,205	0,092	0,914	4,195	0,361	0,000
Conscientiousness -> Sharing	-0,013	0,089	0,030	0,089	0,186	0,076	0,070	1,172	0,944	0,242
Entrepreneurial Culture_ -> Rewards	0,611	0,345	0,624	0,356	0,118	0,073	5,158	4,714	0,000	0,000
Entrepreneurial Culture_ -> Silo Mentality	0,082	0,116	0,017	0,114	0,293	0,155	0,281	0,751	0,779	0,453
Extraversion -> Communications^Relationships	-0,129	0,112	-0,071	0,112	0,223	0,074	0,579	1,524	0,563	0,128
Extraversion -> Silo Mentality	-0,197	0,145	-0,170	0,145	0,177	0,077	1,114	1,887	0,266	0,060
Extraversion -> Team Culture	0,289	0,415	0,323	0,431	0,224	0,062	1,289	6,721	0,198	0,000
Help^Trust -> Communications^Relationships	-0,057	0,079	-0,073	0,085	0,235	0,063	0,245	1,248	0,807	0,212
Help^Trust -> Entrepreneurial Culture_	0,142	0,300	0,219	0,310	0,186	0,059	0,765	5,105	0,445	0,000
Help^Trust -> Rational culture_	0,439	0,127	0,475	0,141	0,160	0,074	2,744	1,709	0,006	0,088
Help^Trust -> Silo Mentality	-0,088	0,019	-0,082	0,024	0,157	0,073	0,563	0,263	0,574	0,792
Management Tenure -> Communications^Relationships	-0,346	-0,166	-0,331	-0,162	0,198	0,077	1,753	2,163	0,080	0,031
Openness to Experience -> Entrepreneurial Culture_	0,632	0,428	0,587	0,433	0,185	0,073	3,421	5,839	0,001	0,000
Openness to Experience -> Sharing	0,614	0,092	0,559	0,094	0,206	0,061	2,985	1,504	0,003	0,133
Openness to Experience -> Silo Mentality	0,512	0,099	0,451	0,102	0,222	0,073	2,307	1,352	0,021	0,177
Rational culture_ -> Sharing	0,387	0,666	0,398	0,666	0,192	0,058	2,013	#### #	0,045	0,000
Rational culture_ -> Silo Mentality	0,181	0,174	0,194	0,187	0,190	0,129	0,955	1,351	0,340	0,177
Team Culture -> Communications^Relationships	0,711	0,583	0,694	0,580	0,195	0,062	3,652	9,353	0,000	0,000
Team Culture -> Silo Mentality	0,370	0,248	0,457	0,240	0,276	0,146	1,342	1,703	0,180	0,089

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