

# **Interrelationships between human capital and social capital in small and medium sized firms: The effect of age and sector of activity**

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## **Abstract**

This study explores the interconnection between human factors and social factors and analyses the relations influenced by the specific activity and age of firms. A statistical approach is implemented which applies factor analysis techniques, based on a sample of small and medium sized firms from four sectors of activity which are between four and fifteen years old, and are split into three time periods. It is found that there are interconnected groups of human capital and social capital factors, although a sizeable proportion of the literature conceptually separates these factors and deals with them individually. It is also ascertained that this relationship is influenced by the field of activity and the age of the firms.

**Key-words:** Entrepreneurship; factor analysis; human capital; management; social capital.

## 1. Introduction

Issues of human capital and social capital traditionally carry weight in large and mature firms. The economic and social importance of small and medium-sized firms has received little attention in general, although interest in them has recently been growing. In these firms entrepreneurship or successful management, among other factors, is very closely linked to the relation between the human capital and the social capital, because the business process, to a large extent, depends on the dynamics of the individual, the contingency of many of his/her influences and the context (Anderson, 2000).

The theory of social capital refers to the ability of the actors to gain benefits from their social network, personal relationships and the quality of association (Lin et al, 1981; Portes, 1998). However, social capital is about individuals, the way they relate or interact with one another, leading Nahapiet and Ghoshal (1998) to use the expression 'social capital of the individual' to correspond to the sum of the real and potential resources derived from the network of relationships that this individual possesses.

Human capital theory states that knowledge supplies individuals with greater cognitive skills, making them more productive and increasing their potential and efficiency to carry out their activities (Becker, 1964; Mincer, 1974). Bates (1995) and Shane and Venkataran (2000) say that individuals with a higher level of human capital, as they are more confident, feel they are less at risk, which gives them more motivation for entrepreneurial activity.

Putnam (2000) and Adler and Kwon (2002), in analysing social capital, consider that the affective bond among actors and the external connections they establish are useful in obtaining resources and improving confidence in the organisation. From a business perspective, social capital supplies connections that make it easy to discover opportunities and identify, gather and attribute scarce resources (Greene and Brown, 1997; Uzzi, 1999).

This paper raises several issues. Do the conditions of social position, social recognition and social interconnections interrelate differently depending on the characteristics of the entrepreneur or the top manager? Can different fields of activity be associated with different

characteristics of the entrepreneur or the senior manager? And what happens in relation to the age of the firms?

The literature has acknowledged the importance of social capital, although there are still very insufficient results regarding the impact of the social structure factors on human capital (Bates, 1995; Bruderl and Preisendorfer, 1998). Different authors (Coleman, 1988; Nahapiet and Ghoshal, 1998; Lester et al., 2008) believe that social capital and human capital are conceptually difficult to separate and isolate, as well as their effects in practical terms, which other authors contest (Florin et al., 2003). It is not clear if the greater importance of social capital is tied in with the network of interconnections (positive externalities) or social status (negative externalities) (Glaeser et al., 2002). These authors say that “the connection between social capital and human capital is one of the most robust empirical regularities in the social capital literature. Better understanding this connection should be a key goal for future research”. It is not well understood whether there are factors relating human capital and social capital that are common to business enterprises in different fields of activity. It is also unclear whether or not the firms’ age influences the kind of relations between the human factors and the social factors.

The focus of this study lies in finding out the kind of human factors and social factors of entrepreneurs and managers of small and medium-sized firms that are interconnected and understanding whether or not this relationship is different depending on the field of activity and the age of the firms.

The argument is based on the economic and social relevance of small and medium sized firms and the insufficient understanding of the interconnections between the personal traits of the entrepreneurs or senior managers and their status, involvement or social recognition. As well as their ability and skills, it is presumed that their relationships and insertion into society is relevant, namely their participation in cultural, sporting, political or other kinds of associations, the ties that are established among one another and the encouragement and support they receive from their family. These skills, associated to the conditions of status, will depend on or influence personal factors, be they experience, knowledge, proficiency in techniques or other specific factors that the firms benefit from. It is also possible that social

capital factors can be intrinsic to the individual, and not obviously or directly related to factors of human capital. They remain relevant but they are not subordinated, which could indicate independence. Furthermore, it is supposed that the field of activity that the firms carry out and their age will differentiate the relationship factors between the human capital and the social capital.

The option was taken to analyse a specific period, after the initial years of the firm, because this generally coincides with the need to develop and consolidate the organisation as a major internal challenge, meaning that it is fundamental to mobilise the best people and appropriate their resources. Likewise, external challenges also arise because in strong competition the firm needs to get its hands on all their social capital resources over time, particularly for a sufficiently lengthy period in order to establish consolidated social relations and recognition. The empirical assessment and observation of the firms leads one to conclude that cycles occur, without conclusive support to justify a longer or shorter period, and as such the option was taken to define three periods.

The goal of this paper is to analyse the kind of relationship that exists between the factors that characterise human capital and social capital, using multivariate factor analysis techniques and ascertaining the influence of the sector of activity of the firm in the relationship between human capital and social capital.

The article is organised as follows. After providing an overview of the literature that serves as the background to the study and backed up by the variables, we present the model, the hypotheses of the study and the research methodology, which is followed by the empirical results and respective analysis. Finally, conclusions and guidelines for future research are presented.

## **2. Literature review**

Becker (1964) and Coleman (1988) define human capital as expertise, experiences, knowledge, reputation and skills of an individual and define individual social capital as the sum of effective potential resources and existing resources available, resulting from the

network of relationships that this individual possesses. Glaeser et al. (2002) also identify individual social capital with the social characteristics that allow the entrepreneur or manager to gain benefits from personal interactions in the marketplace and in society.

Although some academics (Florin et al., 2003) make the distinction between human capital and social capital, both Coleman (1988) and Nahapiet and Ghoshal (1998) recognise that conceptually and in practice they are difficult to disassociate. Burt (1997) argues more vehemently that human capital needs social capital, saying the former becomes worthless without the opportunities to apply it afforded by the latter. Moreover, he suggests there is an interactive effect whereby managers with more social capital obtain greater benefits from their human capital. Granovetter (1985) believes that the behaviour of entrepreneurs was so influenced by social factors that it would be misleading to interpret them as independent. More recently, Lester et al., (2008) considered that there is a strong interdependence between human capital and social capital, although they acknowledge the importance of the contributions from many scholars in theorising social capital as distinct from human capital (Adler and Kwon, 2002; Florin et al., 2003).

Glaeser et al. (2002) considers the theoretical bases of the impacts of social capital to be clear, in contrast to the identification of the mechanisms associated to its creation, owing to the fact that the individual is not its true proprietor but rather the community, through the network of relations that exist. These business networks at individual level concentrate on the ties that businessmen have with other individuals and organisations, as actors of the firm (Anderson and Miller, 2003), with each entrepreneur or manager contributing with a unique set of attributes and resources for the firm (Kosnik, 1990). Meanwhile, the incorporation of relational ties may differ, in line with the characteristics of the social relations (Hite, 2003), conferring the network of relations a potential for evolution, and leading to the possibility of discovering new business opportunities and mobilisation of resources.

Granovetter (1973) argues that successful businessmen are those that have a higher likelihood of taking advantage of an important position in social networks, through their interconnection to a wide-ranging array of information sources, of major importance, because the diversity of social bonds plays a relevant role of intermediation in a network of

opportunities (Hart et al., 1997). Woolcock and Narayan (2000) and Putnam (2000) clarify the nature of the social interconnections that tie down, link or unite individuals, whereby, according to Reagans and Zuckerman (2001), teams with greater diversity in the social interconnection structure improve their performance.

Bourdieu (1986) argues that economic capital is at the basis of all the kinds of capital as it interacts with the other forms of influencing the social structures, viewing social life as a multi-dimensional game, insofar as individuals use their economic, social and cultural situation and the capital of resources to obtain status, also recognised as symbolic capital. He also points out that individuals coming from the highest socio-economic status groups are likely to possess greater human capital and to be more open to social contacts and more effective support from these groups.

An important orientation of the literature follows the direction of conceptualising the social capital and the human capital of individuals in an interdependent and interconnected manner, admitting the difficulty in separating their analysis. Another orientation, meanwhile, considers the analysis and conceptualization of human capital and social capital separately. The literature presented below attempts to look into these concepts and highlight the factors used in this paper.

## **2.1 Human capital**

Human capital has been identified as a critical aspect of business knowledge, and especially important to obtain different resources (Brush et al., 2001), as it makes access to extremely useful social relations easier, such as in obtaining specific resources, for which the value and importance of informal contacts is crucial (Glaeser et al., 2002; Brinlee et al., 2004). In numerous studies (Pennings et al., 1998; Gimeno et al., 1997) human capital is considered a key factor for organisational success, namely with regard to the firm founders (Colombo and Grilli, 2005). These authors argue that individuals with greater human capital are likely to make better business decisions. In particular, individuals with more specific human capital based on industry or with business knowledge, due to the possibility of taking greater

advantage of business opportunities. Hambrick and Mason (1984) state that today's actions by managers are influenced by past experience and by the interpersonal relations they have established.

Human capital refers to the quality of a person at expressing himself in his knowledge, skills and qualifications, acquired through education, training and experience (Becker 1993). The studies in general use measures such as degree of education (Gimeno et al. 1997) and experience (Bruderl et al., 1992). Although the results obtained are wide-ranging, there are studies that show that the kind of commercial experience, management experience and business experience significantly influences the business activity, especially when the results are controlled, for example, by factors such as industry (Bates, 1995; Gimeno et al., 1997). Education, experience and knowledge are relevant characteristics of human capital (Pennings et al., 1998; Writh et al., 1995), which allow access, in general, to more business opportunities (Gimeno et al., 1997). Davidsson and Honig, (2003) found that there is a positive association between education and discovery and exploitation of business opportunities. However, Hatch and Zweig (2000) do not believe there is a clear pattern of cognitive orientation or behaviour that can predict business success.

Coleman (1988) states that changes create human capital as they make it easier for individuals to acquire new skills and abilities, enabling them to act differently. He argues that within the family and the surrounding community, social capital is essential to reproduce human capital.

Dimov and Shepherd (2005) adopted industry experience and business experience as formal education variables. They state that in contexts where a high level of human capital dominates, the distinction between the areas of educational specialisation can have a greater impact than the number of years or level of education. However, Davidsson and Honig (2003) do not find a positive relationship between the number of years of education and years of experience. But Colombo and Grilli (2005) find that the founders with experience of technical work obtain different results when compared with those who have commercial work experience, who in this case are more likely to achieve growth.

Possession of knowledge is a key factor that confers a competitive advantage in being a specific asset and not easily appropriated (Barney, 1991; Wright et al., 1995; Pennings et al., 1998). The coordination of knowledge spread over different individuals is a distinctive competence<sup>i</sup> related to the knowledge and skills of the founders, who have learned through education and prior professional experience. Knowledge is heterogeneously distributed throughout the firm and is crucial to understand the differences in performance (Spender, 1996). It is the collective tacit knowledge that sets apart the organisations (Spender, 1996), which, in turn, derives from individual tacit knowledge. The key to the process of collectivising the knowledge lies in the interaction of the individuals within the firm (Nonaka, 1994), which is the reason for the creation of a team with wide-ranging functionalities, made up of individuals with heterogeneous but complementary skills, which should pave the way to better performance (Cooper and Bruno, 1977; Eisenhardt and Schoonhoven, 1990).

Cohen and Levinthal (1990) consider that perceptions are influenced by the capacity of individuals, which enables them to accumulate new knowledge, depending on the existence of a stock of explicit knowledge, formally acquired through training, or implicit knowledge, acquired through experience in several fields. Everything points to the perceptions of risk, opportunities and threats being influenced by the ability to accumulate new knowledge, depending on the existence of stocks of knowledge. Krueger (2000) argues that when we view ourselves as competent, it is more likely that we will understand a given action or situation as being possible, making it more likely to detect and take advantage of opportunities, whose recognition depends essentially on the perception of the situation, the degree of control and self-efficacy.

Anderson and Miller (2003) show that human capital and social capital are interrelated in several ways, which leads entrepreneurs endowed with a high level of human capital to be more likely to relate to other people of the same level, with similar tastes and personal influence. In contrast, businessmen with a lower socio-economic level came off worse in terms of social relations, and were more likely to relate to people who are more limited in terms of human capital, which has implications on their activity and the chances of developing the firm. The entrepreneurs with a higher level of human capital, with access to



individuals occupying high places, obtain more support for their activities and have a better perception of the external context. Xu (1998) ascertained that there is a positive relationship between human capital and the economic status of individuals.

Knowledge, experience and other characteristics of individuals are associated to the social dimension, which is why social capital has been increasingly recognised as important for businessmen (Anderson and Miller, 2003; Myint et al., 2005; Ullhoi, 2005; Yli-Renko et al, 2001). Studies based on structural social capital models and cognitive capital indicate that these characteristics contribute to business success (Liao and Welsch, 2005; Neergaard and Madsen, 2004).

To sum up, the literature highlights the importance of human capital in the business activity as it contributes to the success of organisations and distinguishes multiple characteristic factors of individuals which can be grouped into factors of knowledge, experience, professional proficiency, cognitive ability and action, which ease the path to social relations.

## **2.2 Social capital**

The essence of social capital lies in the network of relations which are made up of family, friends and casual relationships and which provide important resources in terms of knowledge, information and support. It is an asset that is linked to the relational structure, inherent to social relations and networks (Burt, 1997) and which smoothens the path for individual action (Lin *et al.*, 1981; Tsui and Ghoshal, 1998). Anderson and Miller (2003) ascertain that the nature and scope of social capital and the resources that derive from the social network affect the entrepreneur's ability to recognise and pursue certain business opportunities that may present themselves.

The concept of social capital is linked to the attempt to describe the social structure and the relations between individuals which impact on the organisations. It is also a way of observing the social structure in a rational perspective. It refers to the goodwill<sup>ii</sup> created through the social relations that derive from family, friends, work colleagues and other relationships of commitment, supplying access to valuable resources, such as information, influence and solidarity, which can be mobilised to make action easier (Lin 1999; Burt 2000; Adler and

Kwon 2002). Social capital encompasses the context, the stock of relations, interpersonal confidence and the rules that allow certain behaviours between individuals and which ensure conditions for the development of organisations and knowledge sharing (Anklan, 2002). This author considers the activity as having multiple dimensions of which cognitive capacity and aptitude for communication are highlighted, which are influenced by the context (Widén-Wulff and Ginmam, 2004). Teece (2005) believes that the communication process is an essential competency for firms to succeed.

Businessmen often make decisions based on friendships, upon the advice of friends or due to other relationships, which are kept confidential as a form of personal control, which happens more intensely in small businesses (Bruderl and Preisendorfer, 1998; Paxton, 1999; Bennett and Robson, 1999). It is acknowledged, however, that the affective ties provide additional information from the interior of the groups and contribute to gains in efficiency, as they supplant the threats of censure, ensure reciprocity and involve the exploration of new opportunities, with lower opportunity costs (Shane and Venkataraman, 2000).

Different authors (Phillips and Zuckerman, 2001; Westphal and Khanna, 2003) consider the status of the CEO, in some cases, defined in a social ranking, in relation to the members of the business elite. In line with Podolny's thinking (2001) the position in the structure of the group of business elite members tends to be rigid, determining their interests and capacities, and is reflected in the kind of strategies adopted by firms. Glaeser et al. (2002) say that status should be seen as a measure of social influence that allows those who possess it to reward or punish others. Glaeser et al. (2000) have found evidence for and suggest that the variables of status, as relevant forms of individual social capital, allow some people to obtain greater benefits based on non-commercial voluntary operations. Ball *et al.* (1998) showed that status exogenously attributed is based on the market. Both social networks and status are just two of the many forms of social capital.

In several works studying the influence of status on the behaviour of the firm, different perspectives were found (Sterns and Allan 1996; Stuart 1998; Palmer and Barber 2001; Phillips and Zuckerman 2001; Podolny 2001; Baum et al. 2005; Westphal and Khanna 2003). One group found that high status could lead to decisions that threatened the firm or

challenged the interests of dominant groups. In this field, Whestpal and Khanna (2003) showed that individuals are less likely to be punished for improper behaviour when the group has high status, as they are viewed as deserving of social distance in response to the improper behaviour. Another group found that managers not born into traditional families but with high status belonged to an interconnected social elite, and are more likely to make innovative acquisitions because they are less socialized in business practice. Palmer and Barber (2001) showed that in the 1960s the firms led by CEOs who were well interconnected into the social elite, but unable to attain social status as they were not born in traditional families with high status, and as such outside the control of the proprietor families, were interested in acquiring firms to obtain the wealth and status they did not possess and which these purchases could lead to. In contrast, firms managed by CEOs that came from the social elite were less inclined to diversify through acquisitions.

Members of high-status families enjoy big benefits from their social recognition. In contrast, the low-status actors are indifferent or even hostile towards the prevailing practices, which leave them more open to change norms and rules and less interested in everything that is linked to the reinforcement of the status quo (Phillips and Zuckerman 2001).

Davidsson and Honig (2003) say that encouragement of friends and family is strongly linked to entrepreneurship, and the factors of human capital can explain successful results, but only when applied in the context of a relevant social structure. Maintaining, prosecuting and actively developing social relations are hugely important factors for the success of businesses and businessmen. People who belong to groups with greater social capital tend to invest more in social relations and to accumulate this capital when the personal incentives are high, although it is not yet known if this is based on a network of interconnections or on social status<sup>iii</sup> (Glaeser et al., 2002).

Bourdieu (1986) argues that social capital refers to the sum of resources coming from an institutionalised network of relations of mutual recognition, or, in Putman's words (2000), from a collective resource based on norms and networks of interchange established between individuals. Burt (2001) considers the conjugation of closure and brokerage mechanisms as important aspects for the understanding and use of the concept of social capital.

The literature identifies interlinking, reputation or status, personal relations and complicity as the four sources of social capital (Burt, 2000). Its origin can be found in the structure and the content of the social relations of the actors. Meanwhile, the favours and benefices change within the social relations, owing to the fact that the market relations, such as the products and services, are exchanged for money or are negotiated. Adler and Kwon (2002) and Baker (2000) found that investment in the construction of interlinking relations increased one's individual social capital, making it more likely to obtain benefits of information, power and solidarity for individuals and groups.

Businessmen recognise themselves through the interconnections they possess, a process that aids with the identification, articulation and assessment of business opportunities (Aldrich and Zimmer, 1986). More recently Hite (2005) emphasised the importance of interconnections for new entrepreneurs by considering them a critical challenge for the emergence of enterprising firms and the management of the evolution of their relational commitment based on points of articulation and tracking their effects on business strategies, opening up the possibility of opportunities, acquisition of resources and governance of the firm.

Nahapiet and Ghoshal (1998) identified social capital based on the structural, relational and cognitive dimensions, of which Gargiulo and Benassi (2000) highlight the structural dimension as the one that corresponds to the relationships between managers or businessmen that enable social interconnections. When businessmen can call on different personal and social relations, this gives them better access to different economic resources and the establishment of different strategies of interlinking (Lechner and Dowling, 2003; Witt, 2004), a background that enables them to create social capital. Socially 'underprivileged' businessmen acting in activities that have low growth obtain a weak performance (Taylor *et al.*, 2004). In contrast, businessmen with a background of good education in advanced technology and who create firms of fast growth use dynamic strategies of interlinking (Yli-Renko and Autio, 1998). Social capital is positively related to the businessmen's development abilities. The interlinking deriving from repeated and frequent social interaction is essential to achieve an efficient and competitive organisation (Ghoshal and Bartlett, 1990).

The more highly educated individuals, coming from socially favoured environments and with more involvement in associations, have a wider range of interlinking (Erickson, 2004), which is characteristic of broader social structures, which leads to cultural diversity and knowledge about different forms of cultural status or popular status (Lin 1999; Erickson 1996). Holt (1998) considers culture an important social advantage, as it contributes to making it easier to gain access to education, professions and social networks. The experimental results show that learning social interlinking takes longer when non-social interlinking or traffic relations are developed (Janicik and Larrick, 2005), because the depth of the social fit of individuals, it would appear, affects their ability to correctly understand the context, which has implications on their ability to generate social capital.

The relational dimension refers to the standard behaviours based on confidence, reciprocity, obligations and expectations (Adler, 2001; Adler and Kwon, 2002). In an organisational context, social capital represents the relations of acknowledged value by the individual actors through social interlinking (Tsai, 2000). The relations of confidence based on strong ties and weak ties lead to the creation of cognitive social capital, contributing to business learning and the exploitation of opportunities (Lechner and Dowling, 2003).

Lazega (1999) considers social capital a product of multi-complex networks, namely through the combination of work and friendship relationships, in conferring cohesion and different effects on performance, strong in the case of work and weak in the case of friendship. Confidence, as a component or indicator of social capital, should be seen as an important intermediation factor that can generate effects or situations of uncertainty and high risk (Kawachi et al., 1999; Lochner et al., 1999), given that they are of an uncertain social nature (Glaeser et al., 2000), and as such it is conceptually more appropriate as a precursor or an effect rather than being viewed as a component of social capital (Newton, 1997; Torsvik, 2000). Gabarro (1978) suggested that greater confidence in relations derives from social interaction. As businessmen interact with other businessmen, banks and other entities, in principle, they are in a better position to develop relationships of confidence that lead to better physical health and greater emotional support in the process of creating and developing a business.

Davidsson and Honig (2002) suggest strong relations or affection and weak relations or facilitators of bridges among agents, usually wide-ranging, as complementary sources of social capital<sup>iv</sup>. The strong relations between people are very similar, while the weaker relations are generally more wide-ranging (McPherson et al., 2001), and therefore connect different kinds of people with different positions in the social structure.

Burt (1992) views social capital based on the identification and social equivalence of individuals, through sharing affiliations and activities. Social relations that restrict the different groups, which involve high degrees of mutual interdependence and interconnected activities, can reinforce social influence (Anderson and Miller, 2003). These authors argue, and the evidence has shown, that the resources are most likely to be distributed firstly among members of a group that share a common identity (Kramer, 1991) when they are friends (Aron et al., 1991), when they are demographically similar (Tsui et al., 1992) or when they carry out interdependent tasks (Greenburg, 1979).

Schoonhoven and Romanelli (2001) admit that business success results from a social game, along the lines of Emerson's argument (1972), when he considers that the ample use of social capital, in the perspective of social exchanges, influences the performance of organisations. Burt et al., (2000), restricted themselves to managers, and also found that there was a positive relationship between the managers' social capital and their performance.

To sum up, the networks and social interconnections developed by businessmen and managers constitute capital of the utmost importance for firms, which depend on the social position of the business actors and their characteristics. Based on the literature, the different factors that make up social capital can be grouped into factors of status, interlinking, complicity, family support, personal relations and social relations.

### **3. Data**

Social capital is interconnected with human capital, given that the conditions for successful organisations should result from the interaction and relations of influence among the factors which characterise human capital and which characterise social capital.

Given that firms undertake different activities and their age reflects their stage of development, both of which are factors that have implications on the structure and organisation of companies, it was considered that these two aspects (field of activity and age of firm) could influence the relationship between the factors of human capital and the factors of social capital. Therefore, they were made the control variables.

A total of 41 variables were selected, whereby 18 were variables of human capital and 23 variables of social capital. There were 2 control variables.

*Human capital* is grouped in five constructs as follows: (1) knowledge that includes the variables, academic level of the chairman (HC1), academic level of the director/manager (HC2), specific training of the chairman (HC3) and specific training of the director/manager (HC4); (2) experience that includes the variables, business experience (HC5), management/leadership experience (HC6), technical/technological work experience (HC7), commercial work experience (HC8), industry experience (HC9) and diversified experience (HC10); (3) professional proficiency that includes the variables, professional proficiency in the technical/technological area (HC11) and professional proficiency in company management (HC12); (4) cognitive ability that includes the variables, strategic decision making/likelihood to take risks (HC13), ability to innovate (HC14) and perception of risk and threats (HC15); (5) characteristics of action that includes the variables, discovery and exploitation of opportunities (HC16), coordination of widespread knowledge (HC17) and communication skills (HC18).

*Social capital* is grouped into six constructs as follows: (1) status that includes the variables, economic status (SC1), cultural status (SC2), popular status (SC3) and political status (SC4); (2) interlinking that includes the variables, family interlinking (SC5), work interlinking (SC6), sporting interlinking (SC7), interlinking in associations (SC8) and political interlinking (SC9); (3) complicity that includes the variables, interpersonal solidarity (SC10), interpersonal confidence (SC11) and understanding of weaknesses (SC12); (4) personal relations that includes the variables, personal relations with financial entities (SC13), personal relations with the government (SC14), personal relations with business associations (SC15), personal relations with sports associations (SC16) and personal relations with cultural institutions

(SC17); (5) family support that includes the variables, family encouragement for challenges (SC18) and family support to overcome difficulties (SC19); (6) social relations that includes the variables, informal relations with bank/insurance managers (SC20), informal relations with the government (SC21), informal relations with association managers (SC22) and informal relations with cultural institutions (SC23).

The control variables used were the sector of activity (industry, construction, distribution and services) and the age of firms (4-7 years, 8-11 years and 12-15 years).

To enable better reading of the results, as regards the factors of human capital described in this paper, an option was taken to identify the factors most likely to characterise the manager profile and the entrepreneur profile. There is no rigid separation to determine these categories, but some factors tend to favour the kind of profile. No company leader is exclusively more likely to be an entrepreneur or a manager. Often what happens is that there is a prevalence of a certain profile, which leads to the characterisation of the manager-entrepreneur or the entrepreneur-manager. The literature is not conclusive in relation to the factors of characterisation. For this study the factors used to characterise a typical manager are technical/technological work experience, commercial work experience, professional proficiency in the firm's management and coordination of widespread knowledge; factors used to characterise a typical entrepreneur are management/leadership experience, industry experience, wide-ranging experience, strategic decision making/likelihood to take risks, ability to innovate, perception of risks and threats, discovery and exploitation of opportunities and communication skills with employees.

The research centres on small and medium-sized firms from the sectors of activity of industry, construction and public works, distribution and services excluding banks and insurance firms, based in Portugal. The sample was collected from a set of firms that were more than three years old and no more than fifteen years old, because it is believed that this is the period that best captures the evolutionary phase of business projects. The database was supplied by Dun and Bradstreet. The data were collected using a questionnaire, sent to a set of firms selected at random. A total of 199 responses were included. Of these, 59 (29.7%) were industry firms, 33 (16.6%) were construction firms, 45 (22.6%) were distribution



firms, and 62 (31.1%) were service firms. All variables (except 'firm's characterization') were measured on a 5-point Likert-type scale ranging from 1 (less important) to 5 (more important).

#### **4. Research hypotheses**

The research hypotheses were based on the research model and literature on human capital and social capital.

Several authors (Florin, Lubatkin, and Schulze, 2003; Adler and Kwon, 2002; Glaeser et al., 2002) believe that human and social capital are resources of the utmost importance for business success, and conceptualise the two items separately. Other authors more recently (Dimov and Shepherd, 2005; Davidsson and Honig, 2003; Pennings *et al.*, 1998; Nahapiet and Ghoshal, 1998) have found that the factors of human capital and factors of social capital are correlated consistently and positively in successful projects. Anderson and Miller (2003) showed that the resources of human capital and social capital are interrelated in many aspects and that they were important for businessmen, which is why they attempted to analyse how they combined with each other. The data obtained seems to prove the difficulty in separating the approach of these different concepts given the relation of interdependence and interconnection between the different factors. Based on the literature and on the objectives of this research, it is established that:

*Hypothesis 1:* Different factors of human capital, grouped into knowledge, experience, professional proficiency, cognitive ability and action characteristics, have a relation of interdependence and interconnection with different factors of social capital, grouped into status, interlinking, complicity, family support, personal relations and social relations.

The studies in general analyse relations between the factors of human capital and factors of social capital, using samples made up of firms from different activities, which will admittedly influence the kind of relationship between the factors, distorting the results. As such, Bates (1995) argues that it is inappropriate the use samples of firms coming from different sectors

of activity as it confuses the results. Along the same lines of thought, Pennings et al. (1998) admit that the human capital would be specific if there was a certain homogeneity in the sector of activity of the firms, which led Dimov and Shepherd (2005) to consider the different sectors of activity to measure their influence in the variable of human capital. Bates (1995) and Gimeno et al. (1997) state that business activities from different sectors are significantly related to commercial work experience, management experience and business experience of the top-level managers, although the results obtained are wide-ranging. Anderson and Miller (2003) believe that entrepreneurs are the product of their social environment meaning they are conditioned, especially suggesting that the opportunities are influenced by the social origin and that the kind of social capital resources is likely to influence the nature of the business. The data obtained seems to highlight the importance of the sector of activity of the firms in influencing in a different way the relationship between the factors of human capital and the factors of social capital. Based on the literature and on the goals of this research, it is established that:

*Hypothesis 2:* The kind of activity undertaken by the firms influences the relations between the factors of human capital and the factors of social capital.

There is little literature referring to the age of the firms as an influential factor in the relations between human capital and social capital. In the knowledge that firms throughout their life, and especially after their creation – a critical period for survival – until reaching maturity go through different phases of development, everything suggests that the social networks and interrelations change over this period, which has effects on the business project. For these reasons it also seems the relations between the factors of human capital and the factors of social capital are influenced and are different at different periods. Based on this assessment, it is established that:

*Hypothesis 3:* The age of firms influences in a different way the relations between the managers' human capital and social capital.

## **5. Statistical analysis and results**

### **5.1 Methodology**

The statistical technique used is factor analysis, which is considered suitable to work with these types of data, sample size and study aims. Factor analysis describes the covariance relationships among observed variables in terms of a smaller number of unobserved latent variables, called factors. Factor analysis can be viewed as an extension of principal components analysis. For details, see for instance, Everitt and Dunn (2001) and Johnson and Wichern (2007).

We use the principal component factor analysis method in the estimation of the factor loadings and communalities, which uses the square multiple correlations as estimates of the communalities to compute the factor loadings. This procedure drops factors with eigenvalues below 1. We then perform an orthogonal rotation of factors through the varimax method to simplify the factor structure. The goal of this method is to obtain factors with a few large loadings and as many loadings close to zero as possible.

### **5.2 General results**

After estimation of the parameters by principal-component factor analysis, we obtain a three-factor solution for correlations of the 38 human and capital data variables with KMO (Kaiser-Meyer-Olkin measure of sampling adequacy) greater than 0.7. The factor loadings are then transformed through the varimax rotation. The two sets of (unrotated and rotated) loadings are given in Tables 1 and 2 respectively. Figures 1 and 2 show graphs of the two principal component factors derived from both unrotated and rotated factor analysis solutions. The principal-component factor method retained 9 factors with an eigenvalue of 1 or greater, as shown in Tables I and II. The cumulative variance accounted by these factors is 24.53, which is about 70.1% ( $24.53/35$ ) of the total variance.

The first factor (F1) in the unrotated solution (Table I) accounts for 26.1% ( $9.12/35$ ) of the total variance and 37.2% ( $9.12/24.53$ ) of the common variance, and the second factor (F2) accounts for 14.3% ( $5.01/35$ ) of the total variance and 20.4% ( $5.01/24.53$ ) of the common

variance. The communalities indicate the amount of variance that each variable shares with all other variables in the set. For example, 73% of the correlation for the HC5 variable is accounted for by the 9 common factors. All variables (except HC9, H14, HC15 and SC5) have communality estimates of 60% or greater. The overall KMO measure of sampling adequacy is 0.84 with a significant Bartlett test of sphericity ( $p\text{-value} < 0.01$ ), which is meritorious for a factor analysis.

As shown in Figure 1, the results of the unrotated factor analysis clearly suggest three groups of relations among the variables of human capital and social capital.

The first group consists of the variables of cultural status, popular status, political status, family interlinking, sports interlinking, association interlinking, personal relations with the government, personal relations with sports associations, personal relations with business association, informal social relations with banks/insurance firms, informal social relations with the government, informal social relations with leaders of associations and informal social relations with cultural entities and is identified with the holding of socially influential status and power of the company leaders. A differentiated group is constituted solely by the variables of social capital. This group has high loadings on factor 1.

The second group of variables is made up of management/leadership experience, wide-ranging experience, business experience, professional proficiency in management and perception of risks and threats that are characterised as entrepreneurs and which are interconnected with the group of variables of work interlinking, family interlinking, family encouragement, family support to overcome difficulties, personal relations with financial entities and economic status, identified with economic power of the company leaders, which typically are entrepreneurs with family protection. This group has moderate loadings on factor 1.

The third group of variables, interpersonal confidence, understanding of weaknesses and interpersonal solidarity that are identified with complicity or professional protection and are interconnected with the group made up of the variables of commercial work experience, technical work experience, industry experience, professional proficiency in the technical area, ability to innovate and coordination of widespread knowledge, whose characteristics

are typical of managers. It is found that there is a clear professional protection among the leaders of companies who are typically managers. This group has low loadings on factor 1.

As shown in Table II and Figure 2, the varimax rotation improves the structure considerably.

From the two principal-component factors graph, we can see three very distinct groups.

One is formed by the variables of personal relations with the government, personal relations with business associations, personal relations with sports associations, personal relations with cultural entities, informal relations with banks/insurance companies, informal relations with the government, informal relations with association leaders and information relations with cultural entities. It is seen that the relations of the company leaders involve relevant social relationships and personal influence, and this group is differentiated and does not have any connection to the variables of human capital. This group has high loadings on factor 1 and may be labelled as personal influence.

The second group is formed by variables of sports interlinking, association interlinking, political interlinking, popular status and personal relations with sports associations. It is clearly differentiated from other groups and identifies the company leaders as having a social position and important social interconnections. This group has high loadings on factor 2 and may be labelled as status and social involvement.

The third group is formed by variables of business experience, management experience, technical work experience, commercial work experience, industry experience, wide-ranging experience, proficiency in the technical area, proficiency in the management area, communication skills with employees, coordination of widespread knowledge, ability to innovate, perception of risks and threats and specific board level training, characterised as managers-entrepreneurs, who are interconnected with the variables of interpersonal solidarity, interpersonal confidence, understanding of weaknesses, economic status, cultural status, work interlinking, family interlinking, family encouragement and family support to overcome difficulties. It is found that the company leaders are typically managers-entrepreneurs and have economic power and social influence, complicity among peers and family protection. This group has loadings close to zero on factors 1 and 2.

[INSERT TABLE I ABOUT HERE]

[INSERT TABLE II ABOUT HERE]

[INSERT FIGURE 1 ABOUT HERE]

[INSERT FIGURE 2 ABOUT HERE]

### **5.3 Results by sector of activity**

In this section, we apply the principal component factor analysis to human and social capital data by sector of activity (industry, construction, distribution and services). Figure 3 shows the two principal component factors for each one of the cases.

#### ***Industry***

The industry sector firms can be broken down into four groups. One group tends to identify the members of the board of directors as managers-entrepreneurs who use complicity among peers as a form of personal protection; another group tends to identify company leaders as managers-entrepreneurs benefiting from family protection and support; another one tends to identify the company leaders as managers who possess personal relationships and influence; the fourth group tends to identify the company leaders as holders of substantial economic and social power and relevant personal and social influence.

#### ***Construction***

The construction and public works firms can be broken down into four groups. One group tends to identify the members of the board of directors as managers who use or value complicity among one another as a form of professional protection; another group tends to identify the company leaders as entrepreneurs-managers who use or value professional and family complicity; another group tends to identify the company leaders as managers-entrepreneurs who benefit from power of influence and social relations and family protection;

the fourth group tends to identify the company leaders as holders of economic power and substantial social relations.

### ***Distribution***

The distribution sector firms can be associated in three groups. One group tends to identify the members of the board of directors as implementing complicity among one another as a form of professional protection; another group tends to identify the company leaders as managers-entrepreneurs who have social influence and personal relations; the third group tends to identify the members of the board of directors as holders of economic power, substantial social influence and relevant personal relations.

### ***Services***

The firms of the services sector are associated into two groups. One group tends to identify the managers-entrepreneurs as using complicity among one another as a form of professional protection and another group tends to identify the company leaders as holders of economic power, high social influence and relevant personal relations.

## **5.4 Results by age of firm**

The two principal component factors derived from factor analysis using data by firm age (4-7 years old, 8-11 years old, 12-15 years old) are presented in Figure 4.

### ***4-7 years age***

The firms aged from 4-7 years can be associated into three groups. One group tends to identify the company leaders as managers-entrepreneurs who are complicit among one another and who use family interconnection; another group tends to identify the company leaders as managers-entrepreneurs who have economic power, personal influence and family protection; the third group tends to identify the company leaders as holders of power and social influence and personal recognition.

### ***8-11 years age***

The companies aged from 8-11 years can be associated into four groups. One group identifies the company leaders who tend to be entrepreneurs who back up one another as a form of professional protection; another group identifies the company leaders who tend to be

managers-entrepreneurs with a spirit of solidarity among one another and who enjoy family protection; the third group identifies the company leaders who tend to have social power and influence and personal recognition; the last group identifies the company leaders who possess recognition and social influence.

### ***12-15 years age***

The companies aged between 12 and 15 years form three groups. One group identifies the company leaders who tend to back up one another as a form of professional protection; another identifies managers-entrepreneurs who tend to enjoy family protection and support; the third group identifies the company leaders who tend to possess economic and social power and personal recognition.

The main results of the principal-component factor analysis are summarized in Table III.

[INSERT TABLE III ABOUT HERE]

## **6. Discussion**

This research defines three aims, the first of which is to analyse the kind of relationship that exists between the factors that characterise human capital and social capital. In this assessment, using factor analysis, interconnected factors were associated to one another but the direction of the relationships is not shown. The results obtained suggest three different groups, two formed by factors of human capital and social capital and a third made up of only factors of social capital. The different groups of factors show a certain logic of interconnections that different authors consider to be of interest for study (Granovetter, 1985; Coleman, 1988; Nahapiet and Ghoshal, 1998; Lester et al., 2008), albeit acknowledging the difficulty in doing so in a separate and independent form, which justifies this research. The groups gathered together are made up of different factors, by some and not by others, in line with the arguments of Woolcock and Narayan (2000) and Putnam (2000), because of the nature of social interconnections that underlie, bond or unite individuals. Glaeser et al. (2002) questions whether the greater importance of social capital is down to the network of interconnections or social status. Both interfere in the same way to characterise the kind of



social influence of the top managers and businessmen. This study proves that there are factors of human capital that are interconnected with factors of social capital, thereby confirming hypothesis 1.

The first group concentrates only factors of social capital comprising factors of social relations, personal relations, interlinking and status, which is in accordance with the questions raised by several authors (e.g. Nahapiet and Ghoshal, 1998; Anderson and Miller, 2003). Studies carried out (Glaeser et al., 2002; Brinlee et al., 2004) prove the importance of access to social relations through informal contacts to obtain specific resources. Other authors (Hambrick and Mason, 1984; Bates, 1995; Gimeno et al., 1997; Pennings et al., 1998) highlight the importance of past experience and interpersonal relations in influencing the action of managers. In spite of the importance of knowledge (level and kind of training) for human capital (Becker, 1993; Gimeno et al. 1997; Pennings et al., 1998), it was found that the factors of characterisation were not interconnected with the factors of social capital, as the heterogeneous and complementary skills of individuals, in general, lead to better results (Eisenhardt and Schoonhoven, 1990).

The technical/technological and commercial experience, technical or technological proficiency and management proficiency that are typical factors of managers are grouped together with the characteristics of complicity or professional protection. The business and wide-ranging experience and cognitive capacity that are typical of entrepreneurs are grouped together with the factors of family support, interlinking, personal relations and economic status. This relation is in accordance with Bourdieu's arguments (1986), who believes that economic status is of major importance and is at the basis of other kinds of status. There is evidence that these individuals are likely to possess more human capital as they are more likely to cultivate social contacts and more effective support from the groups they are linked to.

The second aim of the research is to ascertain the influence of the firms' field of activity (grouped into sectors) in the relationship between human capital and social capital. The results of the analysis are different comparing the influence of the firms from industry, construction and public works, distribution and services sectors in the relationship between

human capital and social capital. The results prove hypothesis 2. Among the four groups of firms of the industry sector, two tend to be managers-entrepreneurs. In one case they are characterised based on technical and industrial experience, cognitive aptitude of the perception of risks and the ability to innovate, and enjoy complicity as a form of professional protection. Hatch and Zweig (2000) consider that the effects of the factors of cognition were not obvious for business success, but are, however, characteristics of managers' behaviour that in this case contributed to the complicity. Cohen and Levinthal (1990) attribute importance to the perceptions because they influence the ability of individuals to accumulate new knowledge, namely their multiple experiences, which is the source of their skills regarding risk-taking. Friendship, advice from friends and other relations influence the decision making of businessmen, especially in small or medium-sized businesses, as outlined in the literature (Bruderl and Preisendorfer, 1998; Bennett and Robson, 1999). In another case, the managers-entrepreneurs are characterised based on business experience and communication skills, enjoying family protection, which is corroborated by several authors (Coleman 1988; Burt 2000; Adler and Kwon 2002; Anklan, 2002) when they state that social relations derive from the stock of relations, interpersonal confidence, family, friends, work colleagues and other relations of commitment, influenced by the context (Widén-Wulff and Ginmam, 2004) and that the family interlinking is essential for the reproduction of human capital. The context, in this case, is linked to the different kind of company activity, owing to its specific nature. The third group typically tends to be managers characterised by experience and proficiency in management, who are likely to forge social and personal relations with financial entities and work interlinking. The fourth group brings together strongly concentrated factors of social capital, meaning that the company leaders have economic status and relations of personal and social influence. The data obtained are relevant in the knowledge that the social network affects the businessman's ability to recognise and take advantage of opportunities (Anderson and Miller, 2003), gain better access to different economic resources and establish different strategies of interlinking (Lechner and Dowling, 2003; Witt, 2004)

Among the four groups of firms from the construction and public works sector, one typically tends to be managers endowed with technical experience and good communication skills with their employees, enjoying complicity as a form of professional protection; two other groups typically tend to be managers-entrepreneurs, in one case with characteristics based on management, wide-ranging and industry experience, possessing professional complicity among one another and family protection, and in the other case characteristics based on business experience and cognitive skills of risk and innovation, possessing power to influence, social relations and family protection; the fourth group consists of company leaders with economic status and strong social relations.

The companies from the distribution sector can be split into three different groups, of which only one presents factors of interconnection between human capital and social capital. This group typically tends to be managers-entrepreneurs endowed with strong and multiple experiences, professional proficiency, cognitive skills and ability to coordinate knowledge, good communication and social influence and social relations. Colombo and Grilli (2005) find different results between the leaders with technical or technological work experience and those endowed with commercial experience, although the major importance of the factors of human capital are associated with and interconnected to social capital. The other two groups have different concentrations of factors of social capital, in one of which the leaders use complicity as a form of professional protection. Based on confidence, reciprocity, obligations and expectations (Lochner et al., 1999; Adler, 2001; Adler and Kwon, 2002) these behaviours contribute to the creation of cognitive social capital (Tsai, 2000), even though confidence can be of an uncertain social nature (Glaeser et al., 2000). In the other group the leaders are endowed with power deriving from economic status and substantial personal relations and social influence. Davidsson and Honig (2002) refers to the strong relations and affectivity as complementary sources of social capital, which tend to be found among very similar people (Tsui et al., 1992) as they share a common identity (Kramer, 1991).

The services firms form two different groups. One presents factors of interconnection between human capital and social capital, a group that typically tends to be managers-entrepreneurs endowed with strong and wide-ranging experience, professional proficiency,

cognitive capacity and ability to coordinate knowledge and communicate with employees. The other group brings together highly concentrated factors of social capital, meaning that the business leaders possess power deriving from economic and social status, important relations and significant personal and social influence.

The third aim of the research is to ascertain the influence of the age of the firms on the relationship between human capital and social capital. The firms' age was broken down into three time periods: 4-7 years old, 8-11 years old and 12-15 years old. The results of the analysis are different comparing the influence of these three age periods in the relations between the human capital and the social capital, thereby proving hypothesis 3. The companies aged from 4-7 years characterise three different groups, two of which present factors of interconnection between human capital and social capital and a third group of only factors of social capital. In the two groups the company leaders typically tend to be managers-entrepreneurs. In one case their characteristics are based on board experience, management experience, commercial experience, technical experience and industry experience, the cognitive skill of decision making and ability to innovate, coordination of knowledge and communication with employees, enjoying complicity as a form of professional protection and family interconnection. In the other case the managers-entrepreneurs are characterised based on the business experience and wide-ranging experience and on the domain of management, possessing power deriving from economic status, personal influence and family protection. The third group gathers highly concentrated factors of social capital, meaning that the company leaders possess power and significant social influence and personal recognition.

The firms aged from 8 to 11 years fall into four different groups, in which two present factors of interconnection between human capital and social capital and the other two concentrate only factors of social capital. One of the first groups typically tends to have entrepreneurs, with characteristics based on board experience, wide-ranging experience, commercial experience and industry experience and good communication skills with employees, and benefiting from professional protection and family protection; the other group typically tends to be entrepreneurs-managers, with characteristics based on business experience and

management experience, sitting on professional boards and proficiency in management and technical or technological skills, risk assessment and coordination of knowledge. The two other groups bring together factors of social capital in which one is very concentrated, meaning that the company leaders have substantial power and social influence and personal recognition, while the other group congregates recognition and the social influence of the company leaders.

The companies aged from 12 to 15 years are split into three different groups, in which one presents factors of interconnection between human capital and social capital and two concentrate only factors of social capital. The former typically tends to encompass managers-entrepreneurs endowed with wide-ranging board experience, management experience, commercial experience, technical experience and wide-ranging experience, cognitive decision-making skills and the ability to coordinate knowledge and communicate well with employees, within the backdrop of family protection and support. Reinforcing the importance of this kind of support, Davidsson and Honig (2003) highlight the encouragement of friends and family as incentives in relation to entrepreneurial activity that the factors of human capital explain. The other two groups bring together factors of social capital, one of which involves very concentrated factors, corresponding to the set of factors at the disposal of the business leaders, which confer them power deriving from economic and social status and significant influence and personal and social recognition; the other group shows complicity among the business leaders as a form of professional protection.

## **7. Conclusions**

There is a clear interconnection between factors of human capital and factors of social capital that are grouped together in a differentiated form, but also groups of factors of social capital without an obvious relationship with the characteristics of human capital. This research concludes that the business leaders are set apart as managers with a natural inclination to protect themselves professionally through complicity and entrepreneurs who tend to benefit from economic status and family protection. Another group of business

leaders have substantial social influence power conferred by their status, social interlinking and personal recognition.

It is found that the field of activity and age of the companies influence the relationship between factors of human capital and social capital. They also differentiate groups of factors of social capital without any other kind of obvious relationship, which does not happen with factors of human capital. The data gathered in the study shows that there is a clear distinction between the firms grouped into the four sectors of activity, with an obvious difference between firms in the fields of industry and construction and public works, and firms in the fields of distribution and services.

This research contributes to management in clearly highlighting that there is an interconnection between the factors of human capital and the factors of social capital and the need to continue this work regardless of the two concepts, following one of the lines of literature. It also contributes to highlighting the possibility of different groups of factors of social capital presenting opposite effects, which did not happen with groups made up of interconnected factors of human capital and social capital. Another contribution is also linked to the influence of the firms' field of activity and their age in the relationship between the factors of human capital and social capital.

The analysis enables one to understand the interest in carrying out this kind of research applied to samples of companies from different countries, on the assumption that the context influences the relationship between the factors of human capital and social capital in different ways, because, for example, of the level of development, the legislative framework and the organisation of these countries, among other factors. It would also be interesting to ascertain whether or not only groups of factors of social capital have a tendency to produce opposite effects.

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**Table I:** Principal-component factor analysis for human and social capital data

Variable	Unrotated factor loadings									Communality	KMO
	F1	F2	F3	F4	F5	F6	F7	F8	F9		
HC5	0,44	0,43	-0,36	-0,17	-0,08	-0,04	-0,39	-0,14	-0,06	0.73	0.83
HC6	0,45	0,55	-0,33	0,03	-0,03	-0,09	-0,34	-0,10	-0,02	0.75	0.85
HC7	0,21	0,40	-0,33	0,16	-0,02	0,50	0,18	0,31	0,25	0.79	0.73
HC8	0,32	0,49	-0,21	-0,04	-0,17	0,10	-0,04	-0,31	0,30	0.61	0.81
HC9	0,26	0,31	-0,43	-0,05	-0,19	0,23	0,21	-0,11	-0,02	0.49	0.78
HC10	0,41	0,23	-0,43	0,07	-0,10	-0,30	-0,23	-0,12	0,33	0.69	0.83
HC11	0,32	0,44	-0,24	0,17	-0,04	0,47	0,16	0,27	-0,14	0.72	0.82
HC12	0,49	0,55	-0,28	0,10	-0,10	-0,09	-0,14	-0,02	-0,10	0.67	0.89
HC14	0,31	0,52	-0,09	0,13	0,14	-0,08	0,19	0,22	-0,06	0.51	0.90
HC15	0,42	0,38	-0,19	-0,07	0,12	-0,15	0,27	-0,09	-0,13	0.50	0.86
HC17	0,30	0,30	-0,10	0,26	0,27	-0,50	0,21	0,20	-0,21	0.71	0.79
HC18	0,30	0,42	0,01	0,30	0,20	-0,39	0,42	-0,10	0,09	0.74	0.78
SC1	0,48	-0,11	0,03	-0,23	-0,35	0,07	0,17	-0,30	-0,43	0.73	0.85
SC2	0,60	0,15	0,01	-0,04	-0,22	0,09	0,14	-0,18	-0,39	0.64	0.87
SC3	0,62	-0,28	0,15	0,37	-0,26	0,03	0,03	-0,18	-0,11	0.73	0.89
SC4	0,57	-0,37	-0,10	0,40	-0,08	-0,08	-0,23	0,09	-0,06	0.71	0.82
SC5	0,40	0,19	0,53	-0,10	-0,19	-0,02	0,11	-0,05	0,07	0.54	0.83
SC6	0,51	0,35	0,29	0,04	-0,16	0,03	0,21	0,09	0,25	0.61	0.82
SC7	0,64	-0,24	0,27	0,29	-0,21	0,10	0,13	-0,10	0,20	0.74	0.86
SC8	0,71	-0,22	0,26	0,30	-0,08	-0,02	0,03	-0,02	-0,03	0.72	0.85
SC9	0,64	-0,35	-0,02	0,34	0,02	-0,10	-0,24	0,15	0,00	0.74	0.84
SC10	0,20	0,64	0,51	-0,06	0,26	0,18	-0,17	-0,10	-0,04	0.86	0.79
SC11	0,16	0,71	0,45	0,00	0,27	0,11	-0,18	-0,05	-0,03	0.85	0.75
SC12	0,17	0,63	0,50	0,02	0,26	0,12	-0,19	-0,08	-0,06	0.81	0.79
SC13	0,47	-0,13	-0,06	-0,49	0,11	-0,11	0,23	-0,09	0,24	0.62	0.81
SC14	0,67	-0,41	-0,19	-0,12	0,14	0,12	-0,07	0,14	-0,08	0.73	0.80
SC15	0,67	-0,21	-0,16	-0,29	0,23	0,08	0,08	-0,02	0,09	0.67	0.87
SC16	0,69	-0,37	0,18	0,08	-0,04	0,09	0,00	-0,09	0,27	0.75	0.87
SC17	0,75	-0,35	0,05	0,05	0,22	0,04	-0,02	-0,14	0,07	0.76	0.92
SC18	0,46	0,26	0,17	-0,31	-0,37	-0,21	-0,04	0,41	0,01	0.75	0.76
SC19	0,41	0,14	0,33	-0,30	-0,44	-0,20	-0,16	0,41	0,02	0.81	0.71
SC20	0,56	-0,15	-0,02	-0,48	0,13	-0,14	0,14	-0,03	0,05	0.62	0.86
SC21	0,66	-0,34	-0,18	-0,19	0,26	0,12	-0,10	0,20	-0,16	0.78	0.83
SC22	0,73	-0,24	0,02	-0,11	0,28	0,01	-0,11	0,02	0,00	0.70	0.88
SC23	0,76	-0,29	0,08	-0,01	0,23	0,14	-0,02	0,06	-0,05	0.74	0.89
											0.84
Eigenvalue	9.12	5.01	2.48	1.75	1.49	1.35	1.23	1.09	1.01		
Cumulative	9.12	14.13	16.61	18.36	19.85	21.20	22.43	23.52	24.53		
Propor. (%)	26.1	14.3	7.1	5.0	4.3	3.9	3.5	3.1	2.9		
Cumul. (%)	26.1	40.4	47.5	52.5	56.7	60.6	64.1	67.2	70.1		

**Table II:** Principal-component factor analysis for human and social capital data after rotation

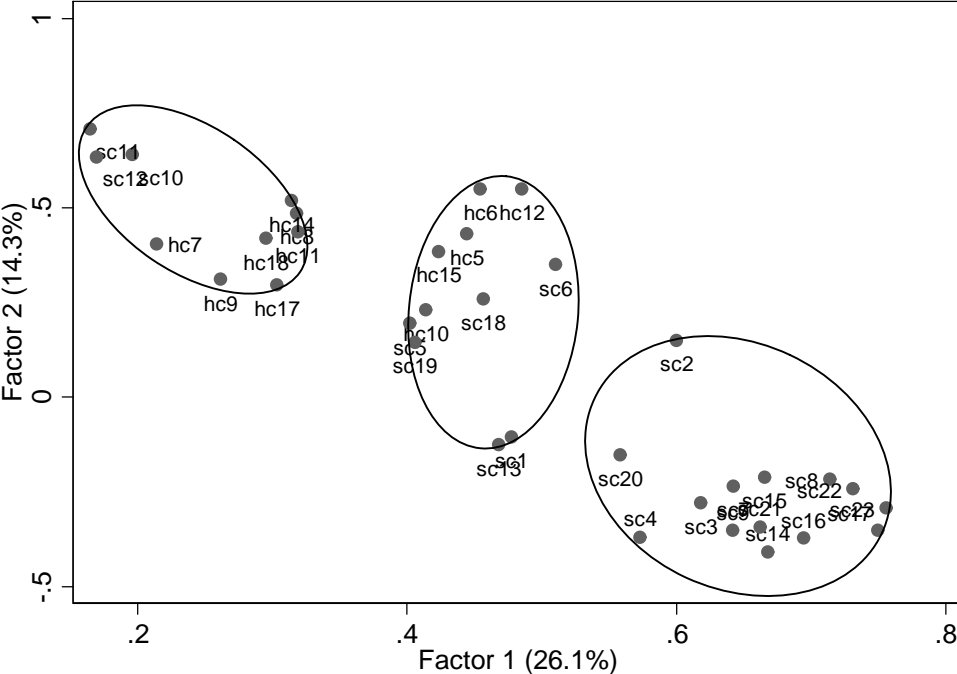
Variable	Rotated factor loadings									Community	KMO
	F1	F2	F3	F4	F5	F6	F7	F8	F9		
HC5	0,20	-0,04	0,17	0,77	0,10	0,13	-0,01	0,16	-0,07	0,73	0,83
HC6	0,09	0,05	0,25	0,78	0,17	0,09	0,16	0,07	-0,08	0,75	0,85
HC7	0,03	0,00	0,07	0,18	0,85	0,01	0,03	-0,13	0,10	0,79	0,73
HC8	-0,05	0,07	0,20	0,58	0,25	0,00	0,00	0,10	0,40	0,61	0,81
HC9	0,05	-0,06	-0,09	0,36	0,46	-0,04	0,07	0,32	0,17	0,49	0,78
HC10	0,10	0,17	-0,12	0,74	0,02	0,08	0,18	-0,16	0,17	0,69	0,83
HC11	0,06	0,04	0,18	0,16	0,77	0,04	0,10	0,17	-0,14	0,72	0,82
HC12	0,05	0,10	0,21	0,64	0,26	0,15	0,28	0,17	-0,08	0,67	0,89
HC14	0,06	-0,02	0,26	0,20	0,36	0,14	0,49	0,01	-0,03	0,51	0,90
HC15	0,22	-0,04	0,15	0,29	0,18	0,03	0,47	0,27	0,13	0,50	0,86
HC17	0,09	0,06	0,08	0,14	0,01	0,08	0,79	-0,02	-0,19	0,71	0,79
HC18	-0,06	0,15	0,19	0,14	0,08	-0,05	0,77	0,01	0,25	0,74	0,78
SC1	0,23	0,22	-0,05	0,08	-0,05	0,15	-0,05	0,77	0,06	0,73	0,85
SC2	0,21	0,29	0,14	0,20	0,15	0,15	0,13	0,63	-0,02	0,64	0,87
SC3	0,13	0,79	-0,05	0,05	-0,01	0,04	0,04	0,30	-0,01	0,73	0,89
SC4	0,27	0,68	-0,21	0,19	-0,01	0,04	0,06	-0,04	-0,28	0,71	0,82
SC5	0,04	0,30	0,41	-0,08	-0,04	0,40	0,05	0,20	0,28	0,54	0,83
SC6	0,05	0,33	0,34	0,08	0,27	0,37	0,20	0,05	0,35	0,61	0,82
SC7	0,18	0,78	0,04	-0,04	0,09	0,12	0,01	0,10	0,24	0,74	0,86
SC8	0,29	0,75	0,10	-0,01	0,01	0,14	0,15	0,15	-0,01	0,72	0,85
SC9	0,38	0,69	-0,11	0,15	-0,02	0,09	0,08	-0,11	-0,25	0,74	0,84
SC10	0,00	-0,03	0,91	0,08	0,07	0,08	0,04	0,03	0,04	0,86	0,79
SC11	-0,05	-0,06	0,89	0,15	0,09	0,08	0,13	-0,03	0,00	0,85	0,75
SC12	-0,05	0,00	0,89	0,09	0,04	0,07	0,09	0,01	-0,02	0,81	0,79
SC13	0,59	-0,02	-0,07	0,08	-0,07	0,18	0,09	0,10	0,47	0,62	0,81
SC14	0,73	0,34	-0,19	0,08	0,11	0,07	-0,05	0,09	-0,12	0,73	0,80
SC15	0,75	0,18	-0,04	0,13	0,09	0,04	0,04	0,10	0,18	0,67	0,87
SC16	0,46	0,68	-0,01	0,01	-0,01	0,10	-0,09	0,00	0,25	0,75	0,87
SC17	0,64	0,57	0,04	0,07	-0,05	-0,07	0,06	0,07	0,09	0,76	0,92
SC18	0,14	0,07	0,11	0,17	0,09	0,81	0,10	0,11	0,03	0,75	0,76
SC19	0,09	0,15	0,13	0,09	-0,03	0,86	-0,04	0,06	-0,01	0,81	0,71
SC20	0,66	0,03	-0,02	0,08	-0,12	0,24	0,10	0,18	0,27	0,62	0,86
SC21	0,81	0,23	-0,09	0,07	0,11	0,07	-0,01	0,08	-0,21	0,78	0,83
SC22	0,72	0,38	0,10	0,12	-0,04	0,06	0,06	0,03	-0,02	0,70	0,88
SC23	0,69	0,49	0,10	-0,01	0,08	0,04	0,04	0,09	-0,05	0,74	0,89
											0,84
Eigenvalue	4.76	4.54	3.25	3.09	2.06	2.01	2.00	1.57	1.25		
Cumulative	4.76	9.30	12.55	15.64	17.70	19.71	21.71	23.28	24.53		
Propor. (%)	13.6	13.0	9.3	8.8	5.9	5.7	5.7	4.5	3.6		
Cumul. (%)	13.6	26.6	35.9	44.7	50.6	56.3	62.0	66.5	70.1		



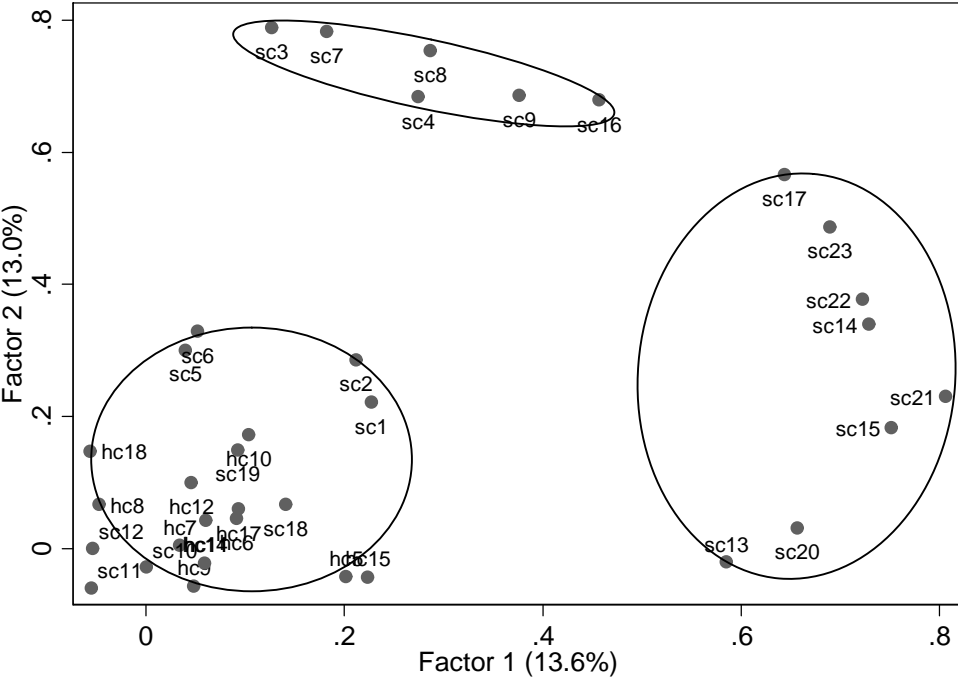
**Table III:** Summary results of the two principal component factors for human capital and social capital data: The effect of age and field of activity

Concepts	<i>Managers</i>	<i>Entrepreneurs</i>	<i>Managers- Entrepreneurs</i>	<i>Company leaders</i>
Professional protection	All Construction	8-12 years	Industry Services 4-7 years 8-12 years	Distribution 12-15 years
Economic status and family protection		All		
Power of social influence				All 4-7 years
Family protection		8-12 years	Industry Construction 4-7 years 8-12 years	
Personal relationships and influence	Industry		Distribution 4-7 years	Distribution Services
Economic status			4-7 years	Construction Distribution Services 12-15 years
Personal relationships and social influence			Construction Distribution	Industry Construction Distribution Services 8-12 years 12-15 years
Family interconnection			4-7 years	
Personal recognition				4-7 years 8-12 years 12-15 years
Family protection and support			12-15 years	

**Figure 1:** Graph of the two principal component factors for human and social capital data

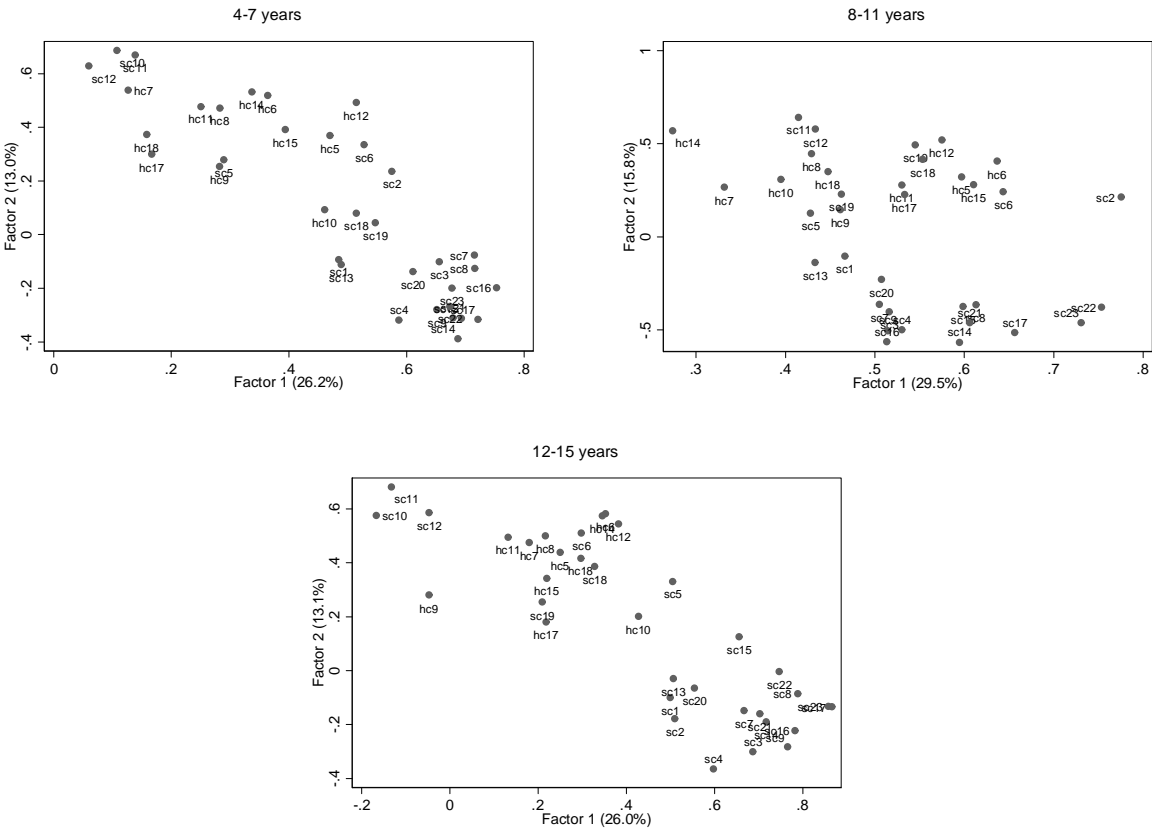


**Figure 2:** Graph of the two principal component factors for human and social capital data, after varimax rotation





**Figure 4:** Graph of the two principal component factors for human capital and social capital data by firm age



## Endnotes

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<sup>i</sup> Distinctive competence consists of the ability of the firm to select, mobilise and use the tangible and intangible assets in performing the tasks and represents what the firm is able to do better than others (Prahalad & Hamel, 1990; Grant, 1996).

<sup>ii</sup> The term goodwill refers to the solidarity, confidence and benevolence that friends grant and the benefits derived thereof (Adler & Kwon, 2002). Social capital is defined as the “goodwill available for individuals or groups”.

<sup>iii</sup> Network of interconnections refers to positive externalities. Social status refers to negative externalities.

<sup>iv</sup> These authors refer to bonding based on affective ties and strong relations and bridging based on weak relations or facilitators of bridges among agents.