



Social capital in the growth of science-and-technology-based SMEs

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ABSTRACT

There is increasing evidence of the positive role social capital plays in accessing resources and capabilities from and with other actors, and in establishing and maintaining business relationships. Yet, surprisingly little is known about how an organization's social capital and its utilization evolve over time. Focusing on this gap, this paper explores the role of social capital and its structural, relational and cognitive dimensions in the growth of science-and-technology-based SMEs. On the basis of our studies on social capital, entrepreneurial networks and SME growth, we develop a conceptual framework to describe their development through four overlapping phases, each of which involves different managerial tasks: innovation assessment, offering development, commercialization and rapid growth. The results of our longitudinal multiple case studies show that; (i) different types of networks and relationships are important in the transitional periods between the growth phases; and (ii) the role of social capital and its different dimensions varies in developing, maintaining and utilizing these partnerships and network relationships. These findings offer several managerial implications.

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1. Introduction

The innovation activity of small firms is generally seen to push out industry boundaries and to open up new business fields (Acs & Audretsch, 1990; Bound, Cummins, Griliches, Hall, & Jaffe, 1984). Even in the context of rapid globalization, the creation of new knowledge has been shown to be an essentially local activity, taking place within social and business relationships between actors with different and complementary knowledge bases (Doz, Santos, & Williamson, 2001; Lundgren, 1995; Lundval, 1992; Powell, Kogut, & Smith-Doerr, 1996). However, as small- and medium-sized enterprises (SMEs) typically suffer from a lack of resources, their central role in the development of technology- and science-driven industries is paradoxical. How can they overcome the burden of resource scarcity?

Evidence from SME and entrepreneurship studies suggests that a key condition for small firms to be innovative and grow is that they should have network mobilization capability; i.e. the ability to establish networks of partners (Hoang and Antonic, 2003; Hung, 2006; Jack, 2005; Jarillo, 1989; Lechner, Dowling, & Welp, 2006; Lipparini and Sobero, 1994; Neergaard, 2005; O'Donnel, Gilmore, Cummins, & Carson, 2001; Pittaway, Robertson, Munir, Denyer, & Neely, 2004; Rickne, 2006). Social capital and relationships are key facilitators in this establishment process (Chetty and Campbell-Hunt, 2003; Cross, Borgatti, & Parker, 2002; Elfring and Hulsink, 2003; Hanna and Walsh, 2002; Hitt and Ireland, 2002; Jarillo, 1989; Lechner

and Dowling, 2003; Lipparini and Sobero, 1994; Rangone, 1999; Rogers, 2004; Yli-Renko, Autio, & Sapienza, 2001; Yli-Renko, Autio, Sapienza, & Tontti, 2002). However, although it is acknowledged that social capital plays an important role in SME networks, little is known of the dynamics of its utilization in company growth (Maurer & Ebers, 2006). Our aim is to fill this research gap by conducting qualitative, multiple case studies that combine the perspectives of social capital, entrepreneurial and industrial networks in the analysis of SME growth.

On the evidence of the existing literature in this field (e.g., Churchill & Lewis, 1983; Jolly, 1997; Moore, 1995a,b), we propose that the growth of science-and-technology-based SMEs could be described in terms of four overlapping phases: innovation assessment, offering development, commercialization and rapid growth. This process perspective is essential, as organizations have been shown to face different requirements along their developmental paths (Greiner, 1993; Kazanjian, 1988). Each phase is characterized by different core value activities that require the availability of matching resources and capabilities. Because of their limited internal resources, SMEs are expected to search for and access external resources through various relationships and networks, primarily through the social capital of their core personnel: generally the CEO and his/her team (Hite & Hesterly, 2001; Maurer & Ebers, 2006; Starr & MacMillan, 1990). It is argued that network mobilization capability and the social capital involved form a critical precondition enabling the firm to transcend from one phase to another.

This study explores the identified critical precondition of network mobilization, the aim being to enhance our understanding of the role of social capital in the early growth phases of science-and-technology-

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based SMEs. We argue that such a deeper understanding would be valuable as the commercial breakthroughs these firms experience provide important innovative product/service offerings for society. More specifically, the objective is to assess how the role of social capital and its dimensions (Nahapiet & Ghoshal, 1998), vary in the transition between the postulated growth phases. Developing a contingency view makes a significant contribution given that research now demonstrates how the value of social capital depends on a number of contexts and contingencies (Maurer & Ebers, 2006).

This paper is organized in six sections. Next we examine the concept of social capital and discuss the industrial and social perspectives on networks in the SME context. We then go on to construct a conceptual framework, which identifies the different growth phases and the key networks that enable an SME to shift from one phase to another. The Section 4 describes the methodology used in the study, which was based on a longitudinal multi-case design, and in Section 5, we present our empirical findings. A discussion on the theoretical and managerial implications, followed by our suggestions for further research, conclude the study.

2. Social capital in SME growth – theoretical background

This study draws on the literature of social capital and SME growth, as well as on studies of entrepreneurial and industrial networks. We begin this discussion by considering aspects of social capital, which we then link to aspects of industrial and social networks.

2.1. The concept of social capital

Social capital, traceable to the early work of Bourdieu (1983), Coleman (1988) and Burt (1992), has been embraced by sociologists, political scientists, economists and organizational theorists (Spence, Schmidpeter, & Habisch, 2003). The attractiveness of the construct has resulted in an expanding body of literature covering several research arenas and close to 20 different definitions (Adler & Kwon, 2002). The main differences between the definitions depend on whether it is analyzed within individual organizations (the internal perspective) or between them (the external perspective). The external view has been explored by Knoke (1999) and Anderson and Jack (2002), who suggest that social capital is a kind of bridge-building process that links individuals and creates a condition for the effective exchange of information and resources.

Nahapiet and Ghoshal (1998) combine the external and internal dimensions in their comprehensive framework by defining social capital as the sum of resources embedded within, available through, and derived from the network of relationships by an individual or a social unit. We adopt this view and take up the three dimensions proposed by Nahapiet and Ghoshal; the structural, the cognitive and the relational, in our analysis.

The structural dimension is reflected in the network ties the firm has and in the network configurations within which it is embedded. It has been shown that the number and diversity of existing networking relationships have a positive influence on firm growth (Powell et al., 1996). This seems to be conditioned by the centrality of the firm in the network and by its networking activity (Walker, Kogut, & Shan, 1997).

The relational dimension refers to the role of non-contractual elements in developing and maintaining actor relationships such as trust, norms, personal expectations, obligations and identification. These have been shown to play an important role in initiating both social and business relationships, and even strategic alliances (Blomqvist, 2002; Coleman, 1990; Larson, 1991; Liebeskind, Oliver, Zucker, & Brewer, 1996).

The cognitive dimension of social capital addresses the relevance of shared understanding through the similarities versus the differences in actors' cognitive schemas. These are often manifested in shared language and narratives. A number of studies support this

notion, and show that shared interpretations and orientations have a positive influence on the firm's ability to create joint knowledge, to adapt and to innovate (Gulati, 1999; Maurer & Ebers, 2006; Yli-Renko et al., 2001).

In sum, the extant research has provided accumulating evidence of the positive role of social capital in accessing resources and capabilities from and with other actors, and in establishing and maintaining business relationships. In spite of these significant results, we know relatively little about how an organization's social capital and its utilization evolve over time, and what kinds of performance implications this has (Adler & Kwon, 2002; Baum, Calabrese, & Silverman, 2000; Maurer & Ebers, 2006). This specifically reflects our research interest in the context of rapidly growing science-and-technology-based SMEs.

2.2. Networks in the SME context: bridging the industrial and social perspectives

The view of social capital as a process for mobilizing resources in networks of actors is remarkably close to the 'Actors, Resources and Activities' (ARA) framework guiding much of the research by the IMP Group (Håkansson & Snehota, 1995). A major difference is that the majority of IMP-driven research, while recognizing the possibility of individual actors in the ARA framework, tends to focus on organizational actors and business networks, while social capital studies also consider an individual's social relationships. This is a major complement to the industrial network approach, especially in the context of science-and-technology-based small firms, which are often individually driven and in which the social networks of the entrepreneur provide the basis for collaboration (Vanhaverbeke, 2001; Hite & Hesterly, 2001; Brüderl & Preisendörfer, 1998; Lechner & Dowling, 2003; Starr & MacMillan, 1990).

Social ties or networks are regarded as important vehicles for exchanging and transferring information in the SME context (Uzzi, 1997; Vanhaverbeke, 2001). They are constituted of person-to-person discussions that provide opportunities to uncover events and sense the changes that are shaping the emergent fields (Möller, Rajala, & Svahn, 2005). Managers' social relationships provide useful information on relevant networks and potential channels that could be used in business development, such as in gaining financial support. In addition, institutional forums such as industry and trade associations and technological development agencies provide relevant milieus for establishing social networks (Powell et al., 1996).

3. The development of a conceptual framework

The extant literature provided the basis for drawing up a preliminary framework of the growth process in science-and-technology-driven SMEs (Fig. 1). We suggest that SME growth could be described in terms of four overlapping growth phases, each of which is characterized through its postulated key tasks.

3.1. The growth phases and their core tasks

The first phase in the framework, innovation assessment, refers to the evaluation of the innovation and its commercial potential from the customers, channels and the competition's perspective (Jolly, 1997). Other key tasks in this phase include an evaluation of the resources and capabilities required to transform the innovation into a feasible business concept (Brush, Greene, & Hart, 2001; Lichtenstein & Brush, 2001; Robson & Bennet, 2000), and the selling of the business idea to potential stakeholders (Balachandra & Friar, 1999; Biemans, 1992; Jolly, 1997). The second phase, offering development, incorporates the development of the initial business model (Morris, Schindehutte, & Allen, 2005), and the accessing and mobilizing of the necessary relationships and networks to facilitate pre-launch activities (Greve &

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