



Brokerage in SME networks

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ABSTRACT

This study focuses on SME networks of design and high-tech companies in Southeast Netherlands. By highlighting the personal networks of members across design and high-tech industries, the study attempts to identify the main brokers in this dynamic environment. In addition, we investigate whether specific characteristics are associated with these brokers. The main contribution of the paper lies in the fact that, in contrast to most other work, it is of a quantitative nature and focuses on brokers identified in an actual network. Studying the phenomenon of brokerage provides us with clear insights into the concept of brokerage regarding SME networks in different fields. In particular we highlight how third parties contribute to the transfer and development of knowledge. Empirical results show, among others, that the most influential brokers are found in the non-profit and science sector and have a long track record in their branch.

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1. Introduction

Firms are increasingly facing their own limitations in today's complex and demanding environment (Das and Teng, 2002; Duysters and de Man, 2003; Eisenhardt and Bird-Schoonhoven, 1996). The need for cooperation is evident in an environment characterized by uncertainty, complexity and rapid technological progress (Acs et al., 1996). Small and medium-sized enterprises in particular are faced by a dilemma. On the one hand SMEs feel the urge to cooperate with others in order to acquire knowledge and other competencies; on the other hand they often face difficulties in finding partners and often they lack the knowledge base to be able to absorb the required knowledge. This dilemma clearly points to a need for intermediaries in order to deal effectively with the complex environment. Bridging organizations are needed to compensate for weaknesses in the local innovation system (Sapsed et al., 2007). Since intermediaries are becoming more and more important the need arises to provide SMEs with insight into what makes them so valuable. This information enables them to decide with what kind of intermediary they should cooperate.

Bridging organizations are gradually gaining attention in SME literature, but there is a clear lack of understanding regarding inter-

mediaries operating within SME networking structures (Klerkx and Leeuwis, 2008). The subject of most network literature is related to the discussion on social capital versus structural holes. New in network literature is the idea of intermediaries whose commercial goal is to bring heterogeneous parties together and co-develop innovations, and not just exploit the knowledge (Obstfeld, 2005). The few existing studies in this area are based on research focusing on large enterprises (Hanna and Walsh, 2002; Pittaway et al., 2004; Shaw, 2006) or qualitative research in industrial districts (Kunmar et al., 1998; Morrison, 2008). Although SMEs are believed to provide vital energy and stimulate growth (Heilbroner, 1984; Schumpeter, 1934) and recently regained popularity as an important topic in the academic literature and policy-making programs (Audretsch and Thurik, 2001; Corbetta et al., 2004; OECD, 2000; Shane and Venkataraman, 2000), quantitative research on networks in entrepreneurship has been limited to the most rudimentary of network data, especially in the field of regional clustering (Burt, 2000; Ter Wal and Boschma, 2009). In addition the support instruments in programs unfortunately do not increase the interaction between SMEs and knowledge providers from outside the business sector (Kaufmann and Tödtling, 2002). It is still unclear how intermediaries can successfully bridge gaps or how specific characteristics influence the capacity of brokers.

The main focus of this study is on the SME network of design and high-tech companies in Southeast Netherlands. Although we consider SMEs, the far majority of firms in these industries are small firms. Design is seen as increasingly important in product development and there is an increase in efforts to establish co-operations between design and high-tech organizations. The design sector is a dynamic but highly fragmented industry. By highlighting the per-

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sonal networks of members across design and high-tech industries, the study attempts to identify the main brokers in this dynamic environment. In addition, we investigate whether specific characteristics are associated with these brokers. The main contribution of the paper lies in the fact that, in contrast to most other work, it is quantitative and that it focuses on brokers identified in an actual network (based on both suppliers and users of the knowledge infrastructure). Studying the phenomenon of brokerage will provide more insights into the concept of brokerage regarding SME networks in different fields. In particular it will highlight how third parties contribute to the transfer and development of knowledge.

The remainder of this paper is structured as follows. In the literature review section we provide a brief overview of the theory and the empirical field in which the research takes place. Then the methodology used to explore the SME network is described. We will end this paper with the main conclusions and a discussion of the findings.

2. Theoretical background

In a world of rapid economic and technological change, organizations increasingly interact with each other (Das and Teng, 2000; Eisenhardt and Bird-Schoonhoven, 1996; Hagedoorn, 2002). A complex environment especially affects small innovative firms because they tend to rely more heavily on technological developments outside the firm than large firms to obtain new knowledge (Hicks and Hedge, 2005; Porter, 2000). In their effort to survive and overcome resource scarcities SMEs are increasingly looking for competent partners that provide them with complementary assets and resources (Almeida and Kogut, 1997; Hite and Hesterly, 2001; McEvily and Zaheer, 1999; Narula, 2004). However, the complex environment and the limited resources and scanning abilities make it difficult for SMEs to find competent partners.

Another complication is the increasing drive towards specialization. Increased global competition leads to an increase in specialization; uncertainty and market fragmentation forces organizations, especially SMEs, to enhance flexibility and search for new ways to differentiate (Acs et al., 1996). Many organizations are forced to specialize in order to make sense of the overload of complex information nowadays. As a result, organizations increasingly have fewer knowledge bases in common and therefore lack a basis from which they can communicate with each other. Due to their differentiated technological know-how and large cognitive distance (Nooteboom et al., 2007) it becomes more difficult to communicate with companies outside their own industry (Nooteboom, 2000). Again SMEs are above all affected by this problem because they have less time and resources to spend on learning to acquire knowledge (Lavie and Rosenkopf, 2006; MacGregor, 2004; Narula, 2004; Powell et al., 1996; Syntens, 2000). As a reaction, intermediaries have emerged that assist entrepreneurs in coping with these challenges. However, the question remains: What makes a broker so valuable?

Finding a partner is often associated with uncertainty about both the skills of the potential partner and his reliability (Powell, 1990). Intermediaries claim to reduce this uncertainty by connecting heterogeneous partners in a prosperous way for all parties (Howells, 2006). In the Sectoral Systems of Innovation literature bridging organizations are regarded as organizations that compensate for weaknesses, such as the absence of domestic suppliers of key technologies, in the local innovation system (Sapsed et al., 2007). This literature points to the need for a better understanding of the structures and boundaries of the sector i.e. the agents and their interactions (Malerba, 2002). Related literature on regional clusters highlights the importance of leader firms in knowledge exchange among SMEs. Recent research has shown that knowl-

edge does not circulate freely among local actors (Bianconi and Barabási, 2001; Verspagen and Werker, 2004). Firms with a strong knowledge base and firms which are at the core of knowledge networks are preferred partners. Close social, cultural, organizational or geographical proximity of firms' matter less in knowledge exchange processes than assumed. Consequently the strategies and competences of leading firms in the SME network are important and are regarded as relevant for explaining local knowledge network dynamism and ultimately innovation activities (Giuliani, 2007; Morrison, 2008).

In network literature opinions regarding intermediaries stem from the concept of social capital which is seen as the value that arises from the way a person is connected to others. The concept includes two main arguments: closure (Coleman, 1988; Walker et al., 1997) and structural holes (Burt, 1992; Walker et al., 1997). Structural holes are gaps of value in the social structure between groups of people or organizations (Burt, 2005). Brokers span these holes and consequently are able to improve information flows between actors. Closure emphasizes in-depth exchange of information within a group of highly connected people. In the past the debate was about what form of social capital should be emphasized in network design. However research by Ahuja (2000) illustrates that actors' strategic goals play an important factor in determining what type of social capital is most favorable. Related research suggests that both forms of social capital have to be present within networks, because firms want to efficiently absorb knowledge as well as create novelty (Gilsing et al., 2008; Hoang and Antoncic, 2003; March, 1991). Closure is needed in order to fully grasp the value created by brokering activities (Burt, 2005). The tertius iungens (those who unite) orientation described by Obstfeld (2005) is a network theory that is in line with the idea that bridging and bonding activities are intertwined. This approach discusses the role of companies that join alliances with the intention to co-develop expected network opportunities. They connect individuals in one's social network by either introducing disconnected people or by facilitating new coordination between connected individuals. Those companies purposefully search for a role as integrator (Winch and Courtney, 2007). As discussed in the information system domain, the recognition of the existence of trust and cooperation in industrial districts helps to identify and create win-win strategies (Kunmar et al., 1998). The tertius iungens orientation emphasizes that being a broker is not about either spanning the structural holes or being highly connected, but about building bridges and being highly involved in the cooperation initiated.

The discussion regarding brokers has changed from whether or not brokerage is (more) valuable to how structural holes are being spanned. A quote from Hargadon and Sutton (1997: 745) describes clearly the contribution of such research to network theory:

"The network perspective treats network actors largely as conduits that pass along unchanged ideas and resources to others. Little attention is devoted to how or why those ideas and resources are transformed and combined into new solutions for other actors and subgroups."

In the context of SMEs, the importance of third parties in building interfaces and developing knowledge is acknowledged in innovation and SME literature (Kaufmann and Tödtling, 2002; Major and Cordey-Hayes, 2000; Sapsed et al., 2007). Very little network research however examines the role of third parties.

According to Howells (2006) brokering is more than information gathering, exchange and linking functions. Intermediaries can provide a much wider, more varied and holistic role for their clients in the innovation process than has generally been acknowledged. The work of Snow et al. (1992) regarding the construction of business networks mention that managers operate as architects, lead operators and caretakers. Each role is critical to the success of a

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