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# Interactive effects of internal brokerage activities in clusters: The case of the Spanish Toy Valley

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## ABSTRACT

This study focuses on how different brokerage roles affect innovation by co-located firms. The study takes into account the effects of the interaction between brokerage activities and the firm's absorptive capacity and extra-cluster openness, and evaluates synergies that derive from the simultaneous development of two different brokerage profiles. Comprehensive fieldwork in the Toy Valley cluster in the Valencia region (Spain) shows that intermediating between firms that are in different positions in the local value system unevenly affects the broker's innovation capability. Furthermore, for roles with a high effect on innovation, the broker's absorptive capacity and extra-cluster connections moderate network position effects.

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## 1. Introduction

The proximity among local firms may promote flows of information through formal and informal networks (Deeds, Decarolis, & Coombs, 2000), which present a territorial dimension (Lorenzen, 2007; Staber, 2001). The network approach elucidates how these flows and innovation processes in geographical clusters take place (Boschma & Ter Wal, 2007; Giuliani & Bell, 2005; Lissoni, 2001; Malipiero, Muñari, & Sobrero, 2005). One of the most promising network-research approaches focuses on knowledge brokerage by firms and organizations; however, in spite of notable exceptions (Hargadon, 1998; Jensen, 2008), many issues still require proper consideration (Stam, 2010).

Literature on clusters examines how gatekeepers generate novelty by drawing on local and external knowledge (Graf, 2011; Morrison, 2008). Specifically, Giuliani and Bell (2005) analyze deeply the advantages of clustered organizations as information brokers, whereas Graf and Krüger (2011) extensively observe the performance implications of gatekeeper positions. McEvily and Zaheer (1999) and Molina-Morales (2005) study cluster-supporting organizations connecting internal and external actors. Although Giuliani and Bell (2005) address

the potential roles of knowledge brokers, the effects of different brokerage roles on innovation by clustered firms still need evaluation, in light of scholars' growing awareness of the need of understanding the distribution of knowledge in networks and how knowledge distribution affects innovation in these local systems (Giuliani, 2007; Morrison & Rabbellotti, 2009).

Grounded in this theoretical framework, which assumes that knowledge brokers influence knowledge diffusion in clusters, this study focuses on how different brokerage roles affect innovation by co-located firms. Because the effects might be contingent on the focal firm's capabilities (Zaheer & Bell, 2005), the analysis takes into account the firm's absorptive capacity and extra-cluster openness, and also evaluates synergies that derive from the simultaneous development of diverse brokerage profiles. Specifically, the study examines the effects of liaison and coordinator brokerage roles on the innovation performance of clustered firms in the Spanish toy industry; effects that, according to theory, firms' absorptive capacity and external openness should moderate.

Findings show that firms combining both brokerage roles achieve higher innovation performance. Additionally, those firms demonstrate that higher internal cognitive attributes and extra-cluster connections engender additional benefits from the liaison broker role. In sum, although access to external resources through brokerage activities associates with a better innovation performance, the internal and external conditions of the clustered firms moderate this relation. The study firstly exposes the theoretical framework and the hypotheses, and then describes the empirical study, explains the results, and presents conclusions and contributions.

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## 2. Theoretical framework

### 2.1. Networks in clusters

Interorganisational relationships affect firm outcomes by conferring access to external resources (McEvily & Marcus, 2005). Particularly, an industrial cluster defines a network within a production context inside a geographically defined area (Parrilli & Sacchetti, 2008). Therefore, relational resources undoubtedly have a territorial dimension (Staber, 2001), and territorial considerations are important to a full understanding of the relational perspective (Bell & Zaheer, 2007). Geographical proximity among firms and other participant organizations imply interconnections and interactions between actors in the network (Sorenson & Baum, 2003), and these interactions are critical for the existence of knowledge flows (Li, Veliyath, & Tan, 2013). The network actors include final product firms, suppliers, customers, service providers, policy agents, and others.

The proximity among similar organizations fosters diverse forms of social capital (McEvily & Zaheer, 1999) and explains the potential advantages of clustered firms. Proximity provides better access to knowledge sources and represents an advantage for companies in their capacity to innovate (Capello, 1999). Furthermore, proximity enables, face to face contacts and consequently the transmission of tacit knowledge (Almeida & Kogut, 1994; Uzzi, 1996).

A step forward in the research on clusters involves the heterogeneity of internal network structures. Giuliani and Bell (2005) find that firms can transfer knowledge asymmetrically, that is, without reciprocity. Recent literature provides strong evidence that knowledge associated with innovation is distributed in a selective, uneven manner (Giuliani, 2007), a closed group of local producers, which are distinct from the rest of the cluster members, restrict knowledge flows (Morrison & Rabelotti, 2009). In summary, a restriction of knowledge access exists usually to subgroups within the cluster network (Boschma & Ter Wal, 2007; Giuliani & Bell, 2005; Lissoni, 2001; Malipiero et al., 2005).

The heterogeneity may partly come from the different brokerage roles that clustered firms play. Brokerage activities give actors power and control of information. A broker can negotiate the amount, the quality, and the sources of the knowledge that knowledge gets from and distributes to partners. These advantages could result in uneven access to information for the whole cluster network. In other words, the distinctive patterns of brokerage relationships of the individual firms in networks can explain the heterogeneity of cluster firm performance (McEvily & Zaheer, 1999).

### 2.2. Brokerage activities

A brokerage activity constitutes a relation that involves three actors, two of whom are the actual parties to the transaction, whereas the third is the intermediary, or broker (McEvily & Zaheer, 1999). Brokerage is a process by which intermediary actors facilitate transactions between other actors (Marsden, 1982). A knowledge broker connects different communities, thus generating flows of knowledge between them (Hargadon, 1998).

Within a cluster, certain firms and organizations act as connectors between subclusters. McEvily and Zaheer (1999) propose that heterogeneity in firms' networks of ties is an important source of differences in their competitive capabilities. Similarly, Molina-Morales (2005) analyzes the role that local supporting organizations play as brokers between the cluster's external and internal networks. Firms also can act as gatekeepers introducing external technological novelties into the cluster and enabling new knowledge production at the local level (Malipiero et al., 2005).

According to the network literature (Galunic & Rodan, 1998; Hargadon, 1998; Hargadon & Sutton, 1997), innovativeness is a function of network position. Brokerage can increase the broker's capacity for innovation. Becker (1970) argues that actors positioned in a preferred

location in the network receive innovation-related information that other firms might miss. The importance of knowledge brokers in generating innovation is well-known (Uzzi & Spiro, 2005). However, the effect and importance of brokerage activities is predictably dependent on who the actors are. Network actors are classifiable in different manners. Gould and Fernandez (1989) categorize them into five subgroups. The present study focuses on two, with differing broker roles: (1) the Coordinator, which is a member of the same group as the principals, so that the brokerage relation is internal to the group; and (2) the Liaison, which is an outsider with respect to both the initiator of the brokerage relation and the receiver of the relation. This actor links distinct groups without having prior allegiance to either. According to previous research (Graf & Krüger, 2011), this distinction accommodates different brokerage contexts and goals.

In industrial clusters, firms acting as brokers connect groups located in different phases of the cluster's value system. The resulting triads represent contexts through which brokers may access specific information related to the main purpose underlying the creation of these inter-organizational structures. The coordinator creates horizontal ties with actors belonging to the same position in the value system (rival firms); while the liaison promotes vertical ties with actors belonging to different positions (complementary firms). Both vertical and horizontal linkages foster innovation, but in different ways.

## 3. Hypotheses

Vertical relationships with suppliers and customers affect firm's competitiveness and particularly innovation. Knowledge acquisition from customers fosters new combinations and speeds and simplifies innovation (Yli-Renko, Autio, & Sapienza, 2001). Interacting with suppliers also accelerates the transfer of knowledge, favoring growth and innovativeness. For instance, car manufacturers can improve product-development coordination by interacting with their suppliers (Dyer & Nobeoka, 2000).

Although the effect on innovation of horizontal relations between competitors receives less attention, these relations have particular relevance in clusters (Boari, Odorici, & Zamarian, 2003). Localization within spatial agglomerations amplifies domestic rivalry, which becomes key for competitive advantage (Porter, 2000). Geographical proximity to rival companies increases the richness and depth of information; in fact, local competition facilitates the adoption and transfer of best practices within an industry (Piore & Sabel, 1984). Finally, geographic location plays an important role in determining what companies can observe and also in strategy (Bogner & Thomas, 1993).

Together, these arguments imply that brokers focusing on both horizontal and vertical relations will acquire higher diversity of information and therefore will be more innovative. Accordingly:

**H1.** Cluster firms combining liaison and coordinator roles reach higher innovation.

### 3.1. Interactive effect of absorptive capacity

Firm-specific factors enhance innovative capacity and help explain variance in firm performance (Zaheer & Bell, 2005). Network structure influences firm outcomes, but these effects may be contingent on the focal firm's capabilities (Zaheer & Bell, 2005). Firm-specific capacities can act as complementary resources. The firm may possess internal characteristics (such as a strong R&D team, internal organizational structures, and organizational culture) that make the firm more innovative than others (Adler & Kwon, 2002). Scholars interested in absorptive capacity, which is the firm's capability to exploit knowledge belonging to external sources (Cohen & Levinthal, 1990, 1994), analyze the strong relation between innovativeness and R&D effort. Furthermore, R&D effort intensifies the relation between brokerage activities and innovation;

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