How Shared Vision Moderates the Effects of Absorptive Capacity and Networking on Clustered Firms' Innovation*

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Abstract

This paper will contribute to the line of research that seeks to identify the determinants of firms' innovation performance. Focusing on the territorial dimension, we investigated the role played by shared vision in the effects of internal resources (absorptive capacity) and external resources (network positioning) on the innovation of firms. To address the research questions, the empirical study drew on a sample of firms belonging to the Valencian textile cluster in Spain. Our findings suggest that networking and firm resources affect performance independently. Furthermore, internal and relational resources are positively active thanks to shared vision. More generally, we aim to contribute to the discussion on the degree to which firms should be involved in the cluster network in order to gain competitive advantages.

Keywords: *Cluster, Absorptive Capacity, Shared Vision, Networking*

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1. INTRODUCTION

In the discussion on the determinants of firms' innovation performance, many relevant advances have been made by researchers over the last few decades. Specifically, authors seem to have abandoned once and for all simplistic considerations on the false debate between internal versus external determining factors, understanding firms as interconnected organizations (Zaheer and Bell, 2005).

On the one hand, internal capacities are needed to capture, combine and exploit all types of resources, particularly those related to innovation. It is commonly accepted that organizations vary widely in their capability to develop, understand, or use knowledge and innovation (Cohen and Levinthal, 1990). Firms' absorptive capacity (Cohen and Levinthal, 1990) is critical to be able to use and benefit from externally acquired knowledge – particularly new knowledge (Zahra and George, 2002). On the other hand, in the current economic and entrepreneurial context, complexity and full-scale innovation requirements move firms forward to interact with external actors. Firms cannot rely solely on internal sourcing, and thus require knowledge from beyond their boundaries when developing their innovations (Rigby and Zook, 2002). Recently, scholars have drawn on the network literature to highlight the importance of the *external* resources available to firms through their networks (Gulati, 1999; Gnyawali and Madhavan, 2001; Bengtsson and Örjan, 2004; McEvily and Marcus, 2005). The location of the firm within its network of relationships is becoming an increasingly more important key factor to enhance the value creation of firms.

In sum, the literature is rich in evidence on the relevant role of both internal and external resources for innovation and also the interactions between them (Cassiman and Veugelers, 2006).

We start with these considerations and we would like to go further by focusing specifically on the effects and interactions involved in innovation processes. Particularly, this paper underlines the relevance of the role played by shared vision in the effects of internal resources (absorptive capacity) and external resources (network

positioning) on the innovation of firms. We understand shared vision as a mechanism that embodies the collective goals and aspirations of the members of a network and helps to integrate or to combine resources (Tsai and Ghoshal, 1998). Common values and a shared vision are the major manifestations of the cognitive dimension of social capital, and may encourage the development of trusting relationships. Differently, network positioning refers to the position of the individual actor in the network, affecting to the relational resources, number of ties, brokerage roles and so on.

In addition we have extended this literature by exploring the territorial dimension of these processes. Thus, a cluster is identified as a network within a production context in a geographically defined area (Boschma and Ter Wal, 2007; Parrilli and Sacchetti, 2008). Thanks to geographical proximity, common learning and knowledge flows between different actors become frequent phenomena. Thus, spaces and the idea of networks as vehicles of knowledge transfer and diffusion greatly overlap (Boschma and Ter Wal, 2007).

Firms' internal resources and network position may independently affect performance, and we expect firms to benefit further when they possess both a superior set of internal resources and a beneficial network structure (Zaheer and Bell, 2005). The relational resources from networking factors and internal resources from absorptive capacity are expected to be positively activated thanks to shared vision. A shared vision is a bonding mechanism that helps different parts of an (organizational) network to integrate or to combine resources. Hence, shared vision acts as facilitator of the absorptive capacity and network position and could mediate their influence (Upadhyayula and Kumar, 2004) on firms' outcomes as innovation.

To address the research question, the empirical study draws on a sample of firms belonging to the textile industrial cluster of Valencia, located in one of the most important industrial areas in eastern Spain. Findings confirm a relevant role played by shared vision as a moderating factor between the determinants of the innovation of clustered firms.

The paper is structured as follows, first the theoretical framework is presented, then the hypotheses are justified and formulated, the empirical study is described and finally we discuss conclusions and implications of our findings.

2. THEORETICAL FRAMEWORK AND HYPOTHESES

2.1 Social capital and shared vision in clusters

Industrial clusters can be defined as a network of inter-organizational relationships between different actors, such as customers, competitors, suppliers, support organizations and local institutions (Piore, 1990). Geographical proximity and a strong feeling of belonging are primary elements facilitating such relationships, which are in turn based on norms and values such as trust and reciprocity, among others (Antonelli, 2000).

Recent research on industrial clusters has led researchers to reconsider the main drivers of cluster innovation, shifting the focus to the role of firms' internal resources and capabilities (Hassink, 2008). In this vein, our theoretical proposal recognizes the cluster's internal heterogeneity, thus granting a prominent role to the characteristics of the individual firm (Giuliani, 2005; Boschma and Ter Wal, 2007). Secondly, we assume the potential relevance of the portfolio of relationships of a clustered firm determining its network position (Boari et al., 2002; Capaldo, 2007; Coombs et al., 2009; Molina-Morales and Martinez-Fernandez, 2009, Li et al., 2013). Lastly, we consider the degree to which members of the network share goals and have similar perceptions of how to act with others, and the exchange of ideas and resources as an amplification of the positive effects of both internal and external resources (Inkpen and Tsang, 2005).

Social capital as rooted in relationships has many different attributes. Following Nahapiet and Ghoshal (1998) is analytically useful to distinguish three highly interconnected different dimensions: The structural dimension that concerns the density or dispersion of the network of ties. The nature of the ties is related to the two additional relational (strength) and cognitive (shared goals and culture) dimensions. Particularly, we pay attention to the cognitive dimension of the social capital, probably the most unexploited of them. According to Tsai and Ghoshal (1998), the cognitive dimension is related to the shared vision among network members, and includes collective objectives and aspirations. Under these relational conditions members of the network thus have more opportunities for a free exchange of ideas and resources.

The notion of shared vision was used extensively in the organizational field. Shared vision is related to the traditional concept of goal-oriented implementation and consensus-building in strategy and leadership literatures (Thompson and Tuden, 1959). Recent literature on organizational learning has reinvigorated the concept of consensus-building, and calls for better understanding of shared vision as a transformational mechanism of a learning organization (Senge, 1990; Sinkula et al., 1997). In this context, shared vision is defined as the organizational values that promote the overall active involvement of organizational (network) members in the development, communication, dissemination, and implementation of organizational goals, contrary to the traditional top-down approach (Wang and Rafiq, 2009).

As Tsai and Ghoshal (1998) suggested, shared vision and other elements such as shared goals, culture or shared values are expressions of cognitive social capital that favor trusting relationships in the strong ties. On the other hand, social interactions play a critical role in shaping goals and values among the members of the network. Shared vision represents the degree to which the members of the network share an understanding of and perspective on the achievement of the network's activities and results.

Sharing goals and vision means that network actors have similar perceptions of how to act with others. In this context, the exchange of ideas and resources may be fostered (Inkpen and Tsang 2005). On the other hand, common culture refers to the set of institutionalized rules and norms that govern behavior in the network (Inkpen and Tsang 2005). In this respect, sharing the same entrepreneurial culture implies sharing concepts such as objectives, concerns, processes, routines, etc. (Rowley 1997). In consequence, common culture includes many different aspects, such as codes, language, histories, visions or goals. All these elements permit and improve the understanding between parties involved in the relationship, thereby facilitating knowledge transmission.

In our case we extended the notion of shared vision to the external interorganizational relationships. In fact, we assume that to some extent the organization in a network reproduces single organization conditions. In clusters organizational proximity, similarity founded in shared vision leads the actors to be connected by sharing the same reference space and knowledge so that they perceive, interpret and evaluate the world in a similar way (Presutti et al., 2011). Proximity and interaction intensity, characteristic of

districts, play a key role in sharing goals and building common values between network members. In this way, actors adopt common codes, values and practices through social interactions (Tsai and Ghoshal 1998). In conclusion, clusters can be described as groups of firms embedded in a strong local network and sharing a relatively homogenous system of values and ideas (Barabel et al., 2007; Becattini 1990). In this respect, some studies observe greater shared culture and values in firms belonging to clusters as compared with external firms (Parra-Requena et al., 2010). In conclusion, shared vision can be viewed as a relational mechanism that helps network members to integrate, exchange resources and obtain relevant knowledge.

2.2 Effects of shared vision and absorptive capacity on clustered firms' innovation

In accordance with some previous innovation research, we consider firms' absorptive capacity as one of the most important determinants (Zahra and George, 2002). The concept of absorptive capacity has been defined by Cohen and Levinthal (1989, 1990) as a firm's ability to identify, assimilate and exploit knowledge from the environment. Identification of external knowledge refers to the capacity of a company to locate and acquire external knowledge that is critical for its activity. It can be assimilated to the notion of *competitive scanning* (McEvily and Zaheer, 1999), which has been associated with the innovative capacity of the firm. After identifying potentially useful knowledge, the firm must transfer that knowledge and put it in a form that the firm can understand (Zhou and Wu, 2010).

Since innovation is a knowledge-intensive process, we would therefore expect higher levels of absorptive capacity to be positively related to more effective innovation outcomes (Stock et al., 2001). Without a doubt, a firm's capacity to identify, assimilate and exploit external knowledge is directly associated to its innovative capacity. Additionally, firms require a solid knowledge base as internal capacity to successfully absorb the stock of knowledge that it is available in other cluster firms (Giuliani, 2007). Knowledge base is defined as the "set of information inputs, knowledge and capabilities that inventors draw on when looking for innovative solutions" (Dosi, 1988), and it resides in skilled knowledge workers in the firm.

On the other hand, at the organization level several studies have revealed that a shared vision (or a similar construct, such as goal congruence) may hold a loosely coupled

system together and promote the integration of an entire organization (e.g. Orton and Weick, 1990). We can thus view a shared vision as a bonding mechanism that helps different parts of an organization or group of organizations to integrate or to combine resources (Tsai and Ghoshal, 1998). Within the context of regional clusters, proximity tends to generate shared goals, values and beliefs that relate to high levels of cognitive cohesion (Bolino et al., 2002). Clusters are associated with high average levels of cognitive cohesion among firms triggered by close proximity (Trigilia, 2001; Wolfe, 2002; Cooke, 2002), which explain intense knowledge exchanges in the area (Baptista and Swann, 1998). In clusters, shared vision basically allows clustered firms to receive a large amount of knowledge and other resources from the other members of the cluster.

The benefits of shared vision can be extended to the cluster level. Shared vision represents the collective goals between organizations in the cluster. When cluster members have the same perceptions, they can avoid potential misunderstandings in their communications and have more opportunities to exchange their ideas or resources. The common goals or interests clustered firms share have another important benefit. They help organizations to see the potential value of their exchange and combination of resources. As a result, cluster members who share a vision will be more likely to become partners sharing or exchanging their resources.

Shared vision acts more as a prerequisite enabling the access to the external resources than a direct factor. Shared vision can be viewed as a relational mechanism that helps network members to integrate, exchange resources and obtain relevant knowledge, and in consequence enhance innovation. Moreover, shared vision is associated to breaking barriers and transmission of knowledge then more knowledge exchanges more potential innovation. For instance, creativity is generated inside the individual organization but needs to be feed by exchanges and combinations of external knowledge, which is facilitated by shared vision between organizations in the exchanges.

This line of argument leads to our final prediction. If shared vision among organizations in clusters facilitates exchanges of knowledge resources among them, then we can expect shared vision to enhance the positive effect of the absorptive capacity on the innovation of the firm. The following hypothesis can be formulated:

Hypothesis 1. *The level of shared vision of a clustered firm would positively moderate the relation between its absorptive capacity and innovation.*

2.3 Effects of shared vision and network position on clustered firms' innovation

In accordance with some recent networking research, we considered the *external* resources available to the firm through its networks to be particularly relevant (McEvily and Marcus, 2005; Gnyawali and Madhavan, 2001; Gulati, 1999). More and more the location of the firm within its network of relationships is becoming a key factor to enhance the value creation of firms.

Clustered firms acquire a large number of knowledge resources from the other members of the cluster. In this sense, knowledge resources flow rapidly within the cluster, thus reducing search costs (Maskell, 2001). However, recent cluster literature is increasingly in agreement with the idea that not all firms in a cluster are equally involved in local networks (Bathelt et al., 2004; Giuliani, 2007). While geographical proximity can facilitate connectivity to stable market relationships between cluster companies, knowledge flows would be restricted to other local communities within the cluster, identified by their knowledge assets, innovative behavior and economic performance (Morrison and Rabellotti, 2009).

As suggested by Giuliani (2007), the most valuable knowledge, which concerns innovation, is unevenly and asymmetrically distributed between cluster companies. In this sense, the pursuit of such knowledge leads firms to strategically select diverse partners that can bring them benefits, for instance in terms of solutions to solve problems, and it is often irrelevant whether they are connected to the business network or not. Thus, knowledge networks, made up of actors with a similar knowledge base and knowledge-sharing interests, emerge within the cluster. These networks will present different characteristics from those of business networks.

In conclusion, the positive association between interorganizational ties and knowledge acquisition is consistent with the assumptions that learning, particularly that involving difficult-to-transfer information, is aided by intensive and repeated interactions. Thus, interactions exert an influence on the capabilities of firms and, hence, constitute a factor contributing to company innovation.

Therefore, relational or social resources have become central in explaining the behavior and performance of organizations (Nahapiet and Ghoshal, 1998). The fundamental explanatory tenets of the social network perspective are based on the idea that the structure of social interactions enhances or constrains access to valued resources (Brass, 1984; Ibarra, 1993; Presutti et al., 2007).

In contrast with this dominant perspective emphasizing the positive effects of the social capital, it must be mentioned those authors who consider also the negative consequences. For instance, Anderson and Jack (2002) referring to the nature of the social capital distinguished between both *glue*, which forms the structure of networks, and at the same time a *lubricant* that facilitates the operation of networks. Moreover, the association between social capital and innovation can be described as an U-inverted form, since in the low levels of social capital, increases result on increases of innovation, but to certain level of social capital, additional increases become neutral or even negative for innovation (Molina-Morales and Martínez-Fernández 2009).

Holding a great number of ties associated with the existence of a shared vision and a set of common values, goals and aspirations (Tsai and Ghoshal, 1998) results in advantages and disadvantages for a firm's external knowledge acquisition and learning. A combination of high network centrality values and shared values foster joint action and common understanding (Portes and Sensenbrenner, 1993; Bolino et al., 2002). Likewise, it increases the opportunities to access knowledge and ideas freely, and enhances the effectiveness of the integration and combination of knowledge (Inkpen and Tsang, 2005).

Clusters are, by definition, associated with the existence of certain shared common norms and beliefs (Barabel et al., 2007; Becattini, 1990), which explain the generalized ease and success of knowledge exchanges within the area (Glassmeier, 2011). We suggest that shared vision would influence the exploitation of the relational advantages afforded by the firm's position in the cluster network.

Firms occupying central positions in the cluster network of knowledge relations can attain benefits from holding direct ties with high levels of shared vision. Ties with high levels of shared vision imply willingness to take action to benefit partners (Bolino et al., 2002). In addition, it would enhance the learning potential of the acquisition of diverse

and non-redundant knowledge coming from external ties by triggering common understanding and knowledge integration (Inkpen and Tsang, 2005).

Overall, we suggest that shared vision increases the potential benefits of a high degree of centrality within a cluster network. Specifically, we anticipate that high degrees of shared vision would positively moderate the effect exerted by the network positioning of the firm in the knowledge network. This can be expressed more formally as the following hypothesis:

Hypothesis 2. *The level of shared vision of a clustered firm would positively moderate the relation between its knowledge network position and innovation.*

INSERT FIGURE 1 ABOUT HERE

3. METHODOLOGY

3.1 Research setting

The empirical study is based on the Valencian textile cluster. The textile industry is one of the most complex manufacturing industries, and is a sector with an enormous number of possible activities involved, from yarn to fabric or knitwear production. In 2011 the textile and clothing industry in Spain accounted for 6% of industrial employment, 3% of GDP and 5.9% of Spanish industrial exports. This industry has traditionally played a central role in the Spanish pattern of specialization, being one of the most representative local agglomerations in Spain. In fact, this sector shows the highest degree of geographical concentration in the country.

Recently in Europe, shifts in international markets, such as international textile trade liberalization or the introduction of new production technologies, have caused new developments in this industry, such as a displacement of the internal low added-value activities to external locations, and consequently there has been a substitution of internal activities for new ones producing superior and higher added-value products. It should be noted that the textile sector has been the focus of many researchers in the cluster

literature (Guerrieri and Pietrobelli, 2004; Sammarra and Belussi, 2006; Crestanello and Tattara, 2011).

Facing increasing competition from countries with emerging economies, European firms have reacted with a variety of strategies, including intense productive delocalization aimed at reducing production costs, and also policies of repositioning in higher quality segments of the market, with more added-value products and services.

Within the context of the textile industry two main traditional segments can be distinguished: clothing and household textiles. However, a third segment has recently become relevant, the so-called *textiles for technical use*. This focuses on technological characteristics, with higher intensity R&D requirements than aesthetical or decorative requirements, as may be the case of home textiles or clothing. The usual destination for these products has been industries and markets other than the traditional ones, such as the automotive industry, building sector, civil engineering, medicine or health and safety. According to the International Rayon and Synthetic Fibres Committee (CIRFS), the level of market penetration in this segment is about 25% in contrast with other traditional segments, which indicates the strong potential market for these products.

In sum, fashion-led industries such as textile-clothing have been primarily affected by globalization pressures and relocation (Schiattarella, 1999), thus causing a continuous reduction in production levels and the number of firms. However textiles for technical use is becoming a market in which Spanish cluster firms can compete, as it is based on innovative strategies rather than cost reduction. In this sense, textile firms are interested in increasing the importance of these technical textile products in their product portfolio, but are limited by their capacity for product diversification (Expósito-Langa et al., 2011).

3.2 Sample collection and data sources

The empirical study has drawn on the population of firms belonging to the Valencian textile industrial cluster in Spain. The textile industry in the Valencian region is located in an industrial cluster in the counties of *L'Alcoià*, *El Comtat* and *L'Alt Vinalopo* in the province of Alicante and in *La Vall d'Albaida* in the province of Valencia. According to IVE (Valencian Institute of Economic Studies), in 2011 about 32,900 people were employed, with a production value of 4,000 million Euros, accounting for 26% and 27%

of the total Spanish sector, respectively. The main products are the so-called home textiles, although in recent years technical textile production has increased considerably.

The empirical study was carried out in two different phases. Firstly, we drew up a roster of companies from the SABI[1] database including general information about firms in the textile cluster, such as their location, main activities, income, financial performance (EBT) and number of employees. As we commented earlier, the textile industry is made up of a wide range of manufacturing processes involving a large number of primary and auxiliary activities. Thus, the number of companies in the cluster is large, around 750, including micro, SMEs and large enterprises. Such a large number of companies cannot, however, be managed in the roster recall technique.

So, in order to refine the population, from the initial list we selected the companies that are more representative, based on the opinion of a panel of experts from several institutions (such as the Polytechnic University of Valencia and the main trade associations of the textile cluster, such as ATEVAL – Valencia Textile Business Association and Research Institution – and AETA – Textile Business Association from Alcoy – together with two main companies from the cluster) and following criteria such as turnover, number of employees or commercialization of innovative products. After applying this filter, a final sample of one hundred companies was established, thereby allowing us to proceed with a representative set of enterprises from the total population addressed by this research. Although small firms are underrepresented in the sample, a goodness-of-fit test allowed us to know that the distribution of firms by size classes does not differ significantly from the size distribution in the population of cluster firms.

The first phase of the study was conducted during the period from May to July 2010. We applied the roster-recall method (Wasserman and Faust, 1994) since it has been frequently used in previous research in this particular field (Giuliani and Bell, 2005; Giuliani, 2007; Morrison and Rabellotti, 2009). This technique consists in sending a questionnaire to the sample companies and attaching the complete list of these companies. They are then invited to select those firms from the list with which they maintain different types of relationships. In our case we followed the procedure developed in Giuliani (2007) to analyze commercial relationships (business network)

[1] SABI is a directory of Spanish and Portuguese companies that collects general information and financial data. In the case of Spain, it covers more than 95% of the companies of the 17 Spanish regions with total yearly revenues over 360,000-420,000 €.

and knowledge exchanges (knowledge network). In order to deploy the commercial relationships we asked the companies with which of the cluster firms mentioned in the roster they had interacted for business matters. In the same way, in order to construct the knowledge network we asked firms 2 questions: firstly, to which of the local firms mentioned in the roster they would turn if they are in a critical situation and need technical advice; and secondly, which of the firms of the list may have benefited from their technical support. This procedure followed by Giuliani (2007) analyzes knowledge relationships based on technical issues. In our case, this procedure is valid since technical information is predominant in the knowledge exchanges of the Valencian textile cluster. The process concluded satisfactorily with a total of 79 completed questionnaires obtained.

In order to complete our analysis, in the second phase of the study we aimed to analyze the companies that answered the roster in more detail by means of face-to-face interviews. Finally we obtained semi-structured interviews with company CEOs and executives, which were conducted during the period from September to November 2010. These interviews allowed us to gain a detailed understanding of company activities, market strategies, product portfolio, as well as the firm's orientation towards innovation process development.

3.3 Variables

Dependent variable

- *Innovation, creation of new products*

This variable attempts to capture the capacity of a company to create and generate new products. Within the context of our research we have characterized the development of new products based on the degree to which they are focused on the technical textiles segment. We are aware of the difficulties involved in assessing innovation performance in such specific contexts. Different approaches can be used to measure a firm's innovative capacity. For several reasons many companies do not use patents to protect this knowledge (Grant, 1996), so instead we followed the recommendation of Tushman and Nadler (1986), who related innovation to new product, service or process creation in terms of business units. Consequently, in the context of our research we have associated innovation with the degree to which a firm dedicates its product portfolio to

technical textiles, since it can be assumed that this segment implies new products (or a line of new products) for the textile industrial cluster. Support for the use of this indicator can be found in previous research on this particular industry (Expósito-Langa et al., 2011).

To avoid limitations of self-assessment of innovation results by companies we ran a control of measures by a panel of experts, following the suggestions of Bell (2005). To do so, in-depth interviews were carried out with a panel of experts from the *AETA Association*. During the session we presented the panel of experts with the list of companies and they were asked to value the innovative output of each of them, in an attempt to reach a consensus among all participants, which was finally captured on a 1-5 Likert scale. As a result of the meeting with experts, we elaborated a control measure to assess the innovation of a company. We then computed the bivariant correlation between experts' and firms' perceptions, resulting in a satisfactory correlation at .672 ($p < .01$). We thereby consider that the measure used in our study captures the innovation results of the firm in an adequate manner.

Independent variables

- *Absorptive Capacity*

Despite the increase in literature on absorptive capacity, this capacity has been defined in multiple ways (Lane et al., 2006; Flatten et al., 2014). As an intangible resource, absorptive capacity is not an exception and deal with the problem of the measurement. Absorptive capacity is the ability of the firm to identify and value, assimilate and exploit external information (Cohen & Levinthal, 1990). Later, Zahra and George (2002) stated that one of the principal lacunae of this specification of absorptive capacity is that it does not capture the dynamic nature of the construct, and accordingly they reconceptualized it. Zahra and George (2002: 186) specified absorptive capacity as "a set of organizational routines and processes by which firms acquire, assimilate, transform and exploit knowledge to produce a dynamic organizational capability". They further suggested two dimensions of absorptive capacity, Potential (PACAP), which encompasses knowledge acquisition and assimilation capabilities, and Realized (RACAP), which includes knowledge transformation and exploitation capabilities. Due to these difficulties in the measurement and according to the objective of this research,

we adapted the measure of the variable to the Potential dimension. This supposes that absorptive capacity acts as a funnel that emphasizes exploratory learning.

To operationalize absorptive capacity we have proposed a number of items related to the evaluation of the degree of commitment of the company towards R&D activities. The first item is defined as the commitment and concern of the management of the company towards R&D and was formulated following Jansen et al. (2005) and Tu et al. (2006). In accordance with other contributions, such as Mangematin and Nesta (1999), Zahra and George (2002) and Jansen et al. (2005), a second item was used to ask respondents about R&D and the importance of cooperation for knowledge acquisition. We asked about the company's participation in R&D programmes (at regional, national or European levels) during the last three years. In order to contemplate the effect of the knowledge base in absorptive capacity we asked about the number of technically qualified personnel in the firm (Giuliani, 2007). Finally, the last item was related to the percentage spent on R&D in relation to total sales (as innovation effort).

An exploratory factor analysis was run to identify the multi-item scale of the absorptive capacity construct. A Cronbach's α value of 0.876 was obtained and the results of the factor analysis reported by the Barlett test of sphericity were significant (Chi-square=199.491; df=10; sig.=.000). Finally, the value of the Kaiser-Meyer-Olkin (KMO) measurement was greater than 0.6 (KMO=.799). Therefore, it was appropriate to proceed with a factor analysis (Coakes and Steed, 2001). A one-factor solution was obtained with varimax rotation and 67.1% of variance extracted from the overall variance.

- *Shared Vision*

To operationalize shared vision we adapted the scale to the particular characteristics of our study. Following Tsai and Ghoshal (1998), we used a three-item measure to assess the level of shared vision in the different firms in the industrial cluster which have relationships. The items were defined as 1) the degree to which a firm shares the same ambitions and vision with firms or institutions in the textile industry cluster, 2) the degree to which the firm is enthusiastic about pursuing the collective goals and missions of its relationships in the cluster, and finally, 3) the degree to which the firm shares goals and objectives with its contacts in the cluster. We used a 1 to 5 Likert scale.

An exploratory factor analysis was run to identify the multi-item scale of the shared vision construct. A Cronbach's α value of 0.864 was obtained and the results of the factor analysis reported by the Barlett test of sphericity were significant (Chi-square=127.739; df=3; sig.=.000). Finally, the KMO measurement was greater than 0.6 (KMO=.678). Therefore, it was appropriate to proceed with a factor analysis (Coakes and Steed, 2001). A one-factor solution was obtained with varimax rotation and 80.841% of variance extracted from the overall variance.

- *Knowledge/Business Network Position*

We have distinguished between two networks in such a way that one of them, the knowledge network, is the one which represents the sources of knowledge resources for the clustered firms, rather than the business network, which represents more formal or merely spatial proximity. Consequently, belonging to the knowledge network can be expected to be related to innovation of the clustered firms, but not necessarily so for the case of the business network.

We consider the egonet the result of the links that a certain actor gives and receives in the network. Thus, the size of the egonet measures the number of connections in the social network developed by the actor (ego), a social network being considered the set of actors and the ties among them. In order to make the egonet size variable operational, we applied social network analysis techniques using the UCINET v.6 software application (Borgatti et al., 2002). This technique provides a tool to explore the structural properties of a network, and encompasses theories, models and applications that are expressed in terms of relational concepts or processes (Wasserman and Faust, 1994).

Two egonet values were obtained for each individual network of each actor in order to compute its total number of ties with other cluster companies. Particularly, we asked about the ties of the company concerning both its knowledge and business networks. Thus, the former was associated to the Knowledge Egonet Size (KES) variable, and the latter to the Business Egonet Size (BES) variable. Although we used the KES variable to contrast hypothesis 2, the BES variable was applied to control results.

On the one hand, the knowledge network facilitates the transfer of (mainly tacit) knowledge related to innovation and technical problems (Giuliani and Bell, 2005;

Giuliani, 2007; Morrison and Rabellotti, 2009; Ramírez-Pasillas, 2010), which implies going one step further than the mere acquisition of information, or explicit knowledge, that could come in turn from other channels such as trade fairs, Internet, industry magazines, etc. Thus, companies were asked to select from the list those companies that had helped them to solve technical problems, provided relevant knowledge or participated jointly in R&D projects in the last 3 years.

On the other hand, business relationships are established based on business-centred interaction, such as exchanges of inputs or services, or partnerships based on a common institutional affiliation (Giuliani, 2007; Ramírez-Pasillas, 2010). Thus, companies were asked to select from the list the companies with whom they had interacted on business issues in the last 3 years. In our case we used the business network position of the firm as a control variable in order to isolate the effect of the knowledge network on innovation.

- *Control (Size)*

Size is usually used as a control variable, as described by Kamien and Schwarz (1982). Thus, larger firms can be expected to invest more resources in obtaining new knowledge sources. Control variables were measured through the number of employees and the logarithms of unit sales in order to smooth it, as used by Tsai (2001), among others.

4. EMPIRICAL RESULTS

4.1 Networks analysis

In order to analyse the relational structure of the participant companies, we used the social network analysis technique in the software program UCINET v.6 (Borgatti et al., 2002). This technique has been used in cluster analysis by several authors (Boschma and Ter Wal, 2007; Giuliani, 2007; Morrisson and Rabellotti, 2009; Ramírez-Pasillas, 2010).

Figures 2 and 3 show the Business and Knowledge networks obtained in the first phase of our analysis. As can be observed in both networks, there are significant differences in

density and structure. On the one hand, the size of the nodes that appear in the figures was an indicator of their egonet size variable. This value was computed and then included in the following phase of the study.

INSERT FIGURES 2 AND 3 ABOUT HERE

4.2 Regression models

In Table 1, we present the basic descriptive statistics and the Pearson's correlation for all variables.

INSERT TABLE 1 ABOUT HERE

To test the hypotheses we ran a stepwise hierarchical regression approach to assess the explanatory power of each set of variables. The models are as follows:

Model 1: $\text{Innovation} = \alpha_1 + \beta_1\text{ACAP} + \beta_2\text{KES} + \beta_3\text{BES} + \beta_4\text{Employees} + \beta_5\text{Sales}$

Model 2: $\text{Innovation} = \alpha_1 + \beta_1\text{ACAP} + \beta_2\text{KES} + \beta_3\text{SharedVision} + \beta_4\text{BES} + \beta_5\text{Employees} + \beta_6\text{Sales}$

Model 3: $\text{Innovation} = \alpha_1 + \beta_1\text{ACAP} + \beta_2\text{KES} + \beta_3\text{SharedVision} + \beta_4\text{ACAPxSharedVision} + \beta_5\text{KESxSharedVision} + \beta_6\text{BES} + \beta_7\text{Employees} + \beta_8\text{Sales}$

Results of the proposed Model 1 (Table 2) showed a significant and positive association between absorptive capacity and egonet knowledge on the innovation of the firm (β=.593, p<.05 and β=.444, p<.001, respectively). On the one hand, these results support what has been argued in previous research confirming that absorptive capacity transforms knowledge into new product and process development (Kogut and Zander, 1992; Szulanski, 1996; or much more recently and in the context of the industrial cluster, Expósito-Langa et al., 2011). On the other hand, our result also supports those studies that argue that the firm's relational resources influence its performance

(Nahapiet and Ghoshal, 1998; Presutti et al., 2007), thereby enhancing or constraining access to valued resources.

INSERT TABLE 2 ABOUT HERE

The moderating role played by the shared vision variable (Models 2 and 3) is supported by the individual relation between absorptive capacity and egonet network on innovation of the firm. This supports Hypotheses 1 and 2. In addition, Figures 4 and 5 show a graphic representation of the moderating effect of the Shared Vision proposed in the original model (Figure 1). For both tests, the absorptive capacity and involvement in the knowledge network exert a higher effect on innovation when the firm has high values of shared vision as moderator variable. That is, as a firm develops internal and relational capacities, having shared vision with the rest of the actors in the cluster becomes essential to enhance the innovation of the firm.

INSERT FIGURES 4 AND 5 ABOUT HERE

5. DISCUSSION

This work was based on the expected complex relationships between absorptive capacity, network position, shared vision and innovation in a territorial cluster. We assumed that absorptive capacity and network position were positively associated to innovation in clustered firms. On the other hand, within the context of the territorial cluster, we investigated the moderating effect of shared vision on the positive association between absorptive capacity and network position on the innovation of the firm. Our findings suggest that not only networking and firm resources affect innovation independently, but these internal and relational resources are positively active thanks to shared vision.

The network perspective has contributed to a better understanding of knowledge and innovative processes in geographical clusters (Giuliani and Bell, 2005; Boschma and Ter Wal, 2007). Additionally, social networks have a territorial dimension (Staber, 2001; Lorenzen, 2007), and in this respect the relational ties that are produced between

close actors are particularly relevant (Malecki, 1995). So, relational dimension, which occurs in networks, implies the interconnections and interactions between behavioral actors in the network. However, geographical proximity can lead to relational dimension, but only when participants develop shared vision and maintain close and mutually dependent relationships the relevant knowledge flows and transfers (Li et al., 2013; Rosenkopf and Almeida, 2003).

In our view our paper contributes to the literature in several different ways. On the one hand, it offers a comprehensive perspective of the innovation process in clustered firms. In fact, the results obtained balance the importance of each category of knowledge resources. Hence, while absorptive capacity is important for innovation processes, the networking intensity of firms to access the firm-external resources must also be considered. On the other hand, this paper belongs to the group of recent attempts to clarify key questions in cluster studies through network analysis. Findings confirm previous literature that has evidenced the relevant role of both internal and external resources for innovation and also the interactions between them (Cassiman and Veugelers, 2006).

A firm's egonet size has provided significant explanatory capacity. Thus, we have distinguished two different categories of relational structures. One refers to knowledge exchanges and the other has to do with the business or commercial exchanges. The significant association between knowledge network and innovation confirms the importance of knowledge flows in the cluster and, moreover, the importance of the individual firm's positioning within the network. In contrast, the fact that the business network lacks any significant association to innovation may require an additional comment. One possible explanation for rejection comes from the very definition of innovation used in our study. Since we considered new product development, and particularly the relative weight of the textile for technical uses, innovation is related to technological innovation rather than other forms of non-technological innovations, such as so-called market innovations. We are convinced that, for the latter category of innovation, the importance of business networks could have been significantly higher.

The main contribution of the paper is the strong empirical evidence found supporting the importance of shared vision as an enhancer of the positive effects of internal resources (absorptive capacity) and external resources (network positioning) on the

innovation of the firm. In other words, firms benefit from resources even more when they have higher levels of shared vision. These findings are in line with some previous research dealing with an initial consideration of shared vision (Tsai and Ghoshal, 1998). In a broader sense, the paper claims the cognitive dimension of social networks may well be of greater relevance (Bengtsson and Sölvell, 2004; Wuyts et al., 2005; Li et al. 2013). Particularly, we seek a more precise and complex relation between this social dimension and innovation, in line with some relevant precedents. For instance, Nooteboom (1992, 1999) proposed that there is an inverted-U shaped relationship between cognitive distance and innovation performance.

Finally, this research suffers from some limitations that may affect the potential generalization of the conclusions and which are related to the specific features of the selected case. Focusing on one single industry may provide us with some advantages but it also presents certain drawbacks. The research allows us better control over the specific aspects of this industry and to customize an innovation measure based on new products, but it would be hard to compare new-product based innovation between different industries. However, it must be accepted that studying a particular industry may introduce bias into the conclusions, thus limiting potential generalizations to other contexts. In conclusion, we must be cautious in generalizing results and conclusions, and a broader analysis is therefore needed to analyze how other cases vary.

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Table 1. Descriptive statistics and correlations of the measurements

Variables	α	Mean	S.D.	1	2	3	4	5	6	7
(1) Innovation	-	2.13	1.279	1						
(2) Absorptive Capacity	.876	.362	.824	.671**	1					
(3) KES	-	2.07	3.21	.224	-.151	1				
(4) BES	-	8.10	7.27	.091	-.101	.767**	1			
(5) Shared Vision	.864	2.5	1.337	.217	.090	-.344	-.289	1		
(6) Employees	-	45.87	30.59	.067	.046	.164	.250	-.016	1	
(7) Sales (log. unit sales)	-	16.21	.654	.011	.116	.083	.320	-.047	.621**	1

N=79 ** p<.01

Table 2. Regression results of models

Dependent variable: Innovation			
	M1	**M2**	**M3**
Absorptive Capacity (ACAP)	.731**	.724**	.655**
	(5.431)	(5.889)	(5.778)
Egonet Knowledge (KES)	.474*	.545**	.643*
	(2.191)	(2.730)	(2.217)
Shared Vision		.312	-.014
		(2.406)	(-.072)
ACAP x Shared Vision			.375*
			(2.764)
KES x Shared Vision			.270*
			(1.032)
Control (Egonet Business) (BES)	-.184	-.135	-.053
	(-.816)	(-.656)	(-.278)
Control (Employees)	.056	.071	.042
	(.330)	(.455)	(.297)
Control (Sales)	-.089	-.143	-.186
	(-.491)	(-.852)	(-1.198)
Model *F*	6.699**	7.660**	8.118**
Adjusted R^2	.496	.579	.830
Change in R^2		.084*	.089*
N= 79; **p< .01; *p< .05			
Standardized regression estimates (t-values)			

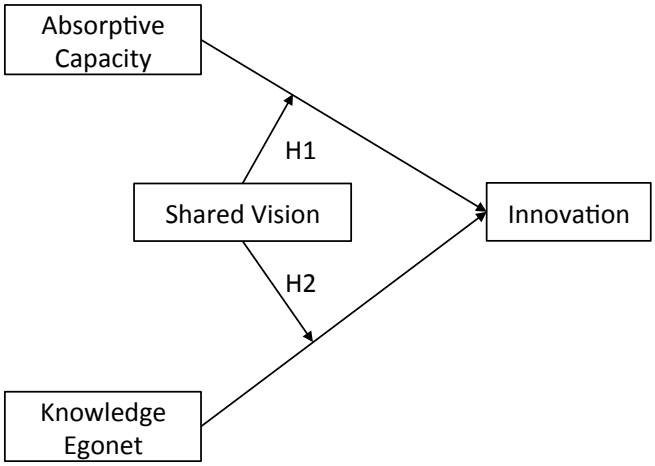

Figure 1. Proposal model

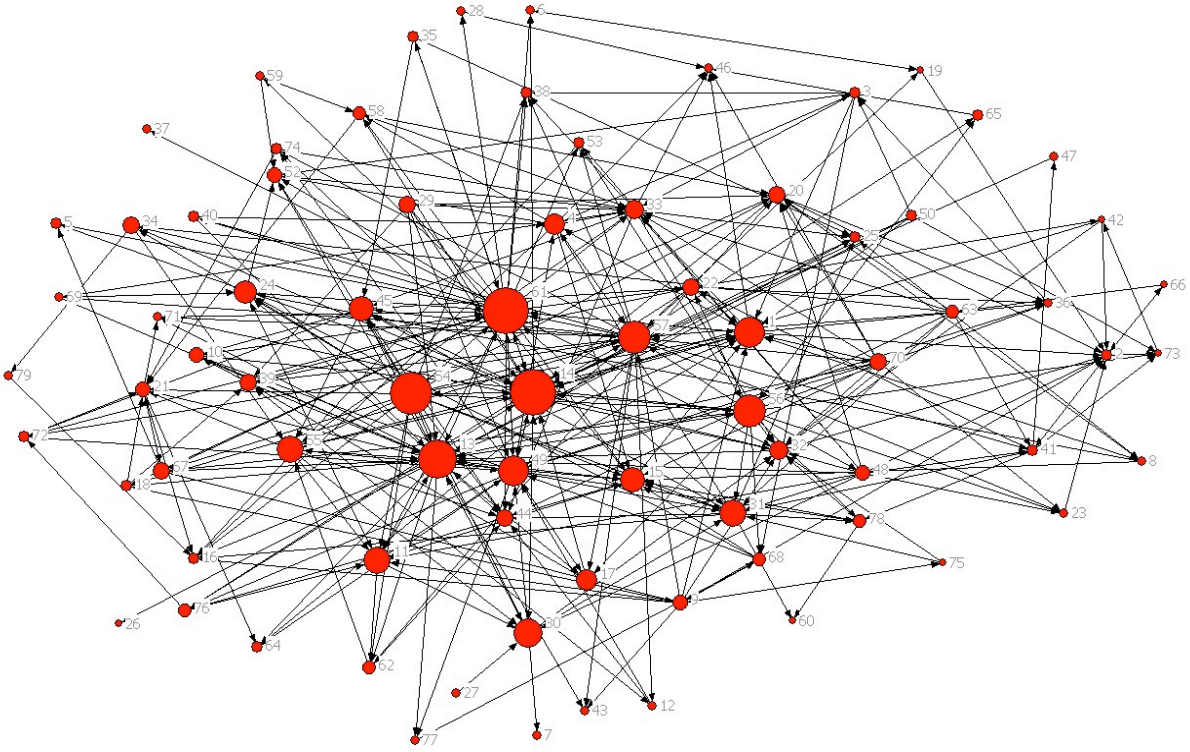

Figure 2. The Business Network of cluster firms

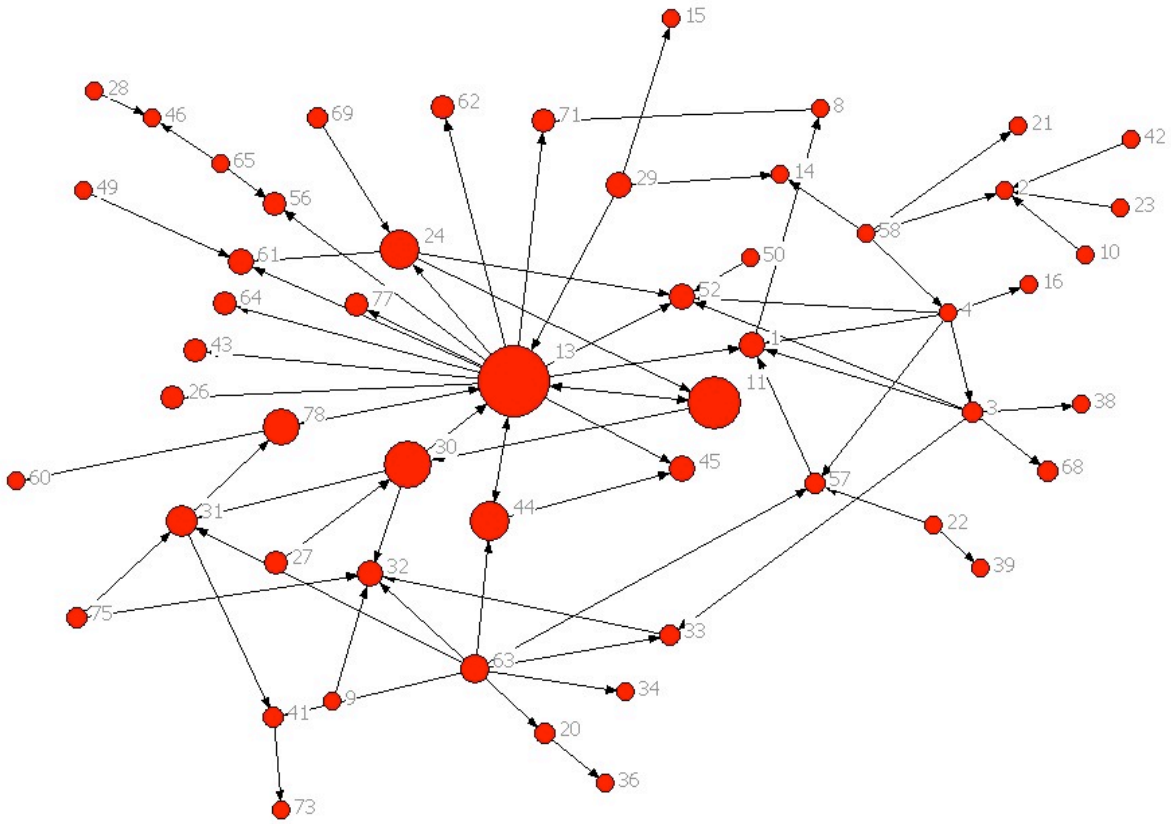

Figure 3. The Knowledge Network of cluster firms

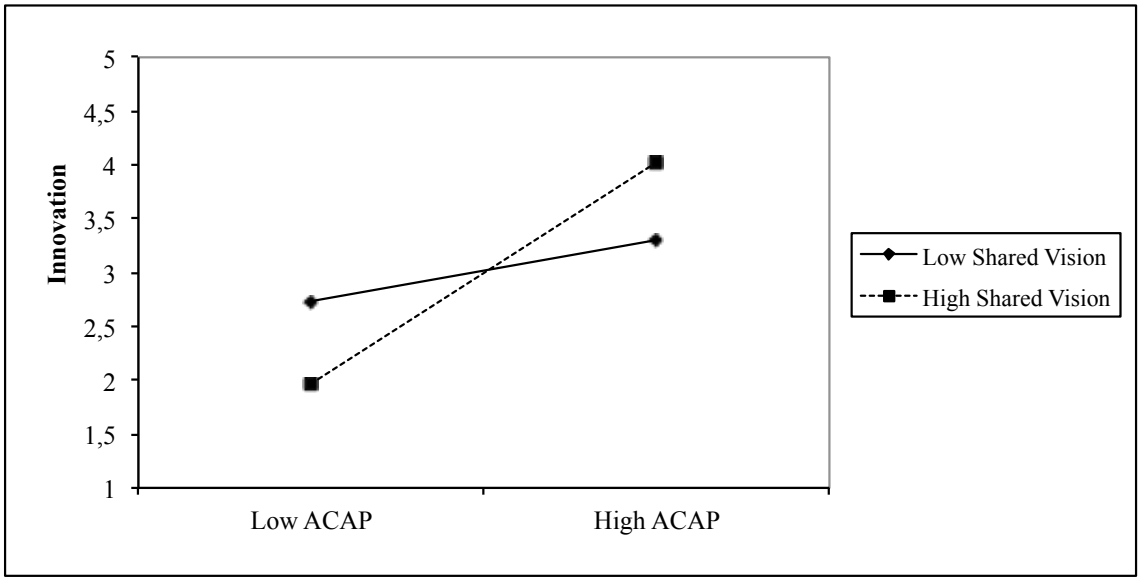

Figure 4. Moderating effect of Shared Vision on the relationship between ACAP and Innovation

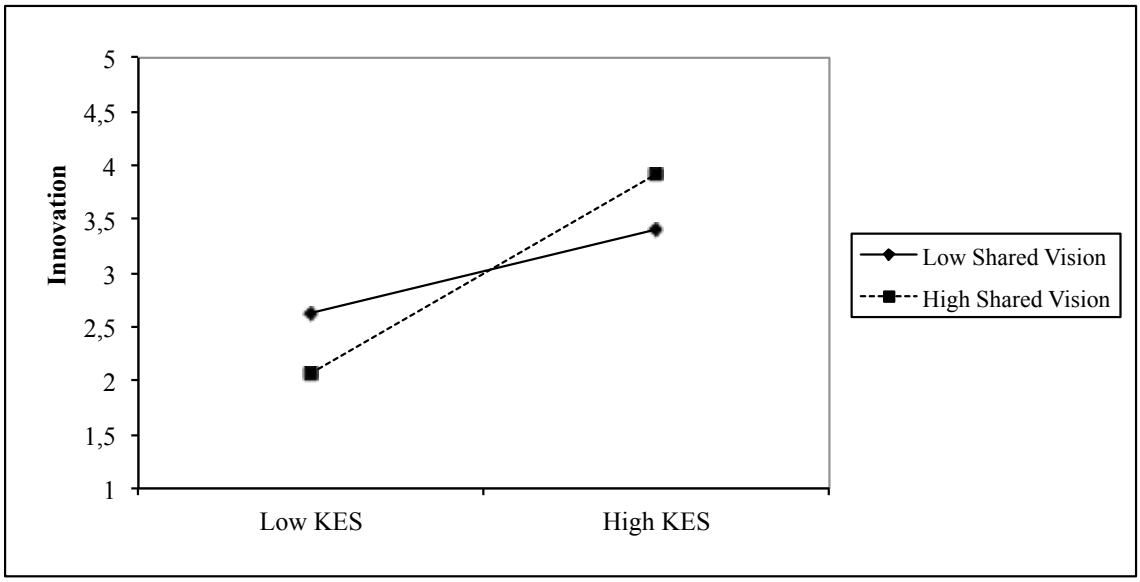

Figure 5. Moderating effect of Shared Vision on the relationship between KES and Innovation