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**Entrepreneurial Orientation and Network Ties:
Innovative Performance of SMEs in an Emerging-
Economy Manufacturing Cluster**

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Entrepreneurial Orientation and Network Ties: Innovative Performance of SMEs in an Emerging-Economy Manufacturing Cluster

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Preliminary Draft

ABSTRACT

This study investigates the role of intra-cluster ties, extra-cluster ties, and entrepreneurial orientation in shaping firms' innovative performance. We conduct our analysis on a primary data set of 120 SMEs in the Cibaduyut footwear-manufacturing cluster, Indonesia. We find that extra-cluster ties mediate the relationship between proactiveness and innovative performance. A combination of high extra-cluster ties and risk taking exert a positive impact on innovative performance. Surprisingly, we find that risk taking negatively moderates the influence of intra-cluster ties on innovative performance. Overall, the findings of this study point to the synergistic effects of entrepreneurial orientation and extra-cluster ties on innovative performance.

Introduction

A growing body of literature in regional economic geography has demonstrated the positive impact of networks within a regional cluster on innovation. Intra-cluster networks (ICTs) encourage cooperation, trust, collective learning, and smooth exchange of knowledge. Clusters play a particularly important role in compensating for the resource constraints SMEs face and spur innovation and growth in these firms. However, knowledge and information trapped in a regional cluster can decay and become obsolete (Giuliani & Bell, 2005). Therefore, although being part of a geographically localized cluster is advantageous, in order to access new knowledge a firm needs to establish linkages beyond its local cluster (Mesquita & Lazzarini, 2008). Research has shown that ties that extend beyond a firm's cluster, or extra-cluster ties (ECTs), are important gateways of critical knowledge and information (Giuliani & Bell, 2005). Thus while ICTs may generate critical location-driven synergies, ECTs complement them by bringing in diverse, novel knowledge inputs.

From a resource based view (RBV) the network encompassing ICTs and ECTs of a firm can be seen as its resource pool, contributing to the firm's technical know-how, trade contacts, and capital (Wernerfelt, 1984). In addition, network ties provide legitimacy, increasing a firm's odds of forming partnerships with highly valuable potential partners (Eisenhardt & Schoonhoven, 1996). The large bundle of resources that networks generate can increase the ability of the firm to create new combinations of knowledge, thereby enhancing its competitive advantage (Wernerfelt, 1984). Such a so called recombinatorial ability is particularly relevant when firms confront a high degree of competition, as SMEs in emerging economies do. Next to network ties, entrepreneurial orientation (EO) is another significant resource for achieving competitive advantage in general (Covin & Miles, 1999; Covin & Slevin, 1991; Lumpkin & Dess, 1996; Wiklund & Shepherd, 2005), and doing so in particular through innovation (Avlonitis & Salavou, 2007; Boso, Cadogan, & Story, 2012; Pérez-Luño, Wiklund, & Cabrera, 2011). EO represents a unique resource to a firm because it cannot be purchased in the market, and it is difficult to copy because firms invest considerable time to nurture their EO cultures (Lee, Lee, & Pennings, 2001). Like a firm's network, EO too is particularly salient for market success in the highly competitive and turbulent environments in emerging economies (Covin and Slevin (1989).

In line with RBV, EO, along with network ties, is a resource that adds to the competitive advantage of a firm. Surprisingly, only a few studies have examined the concurrent impact of entrepreneurial orientation and networks (Lee, et al., 2001; Stam & Elfring, 2008). In their study, Lee et al. (2001) investigated the relationship of EO and external networks such as government and university on sales growth, and Stam and Elring (2008) worked on the impact of EO and bridging ties on sales growth. We take a different approach, i.e. we study the interplay of EO and network on innovative performance. In our study, we distinguish the role of EO into proactiveness and risk-taking because we believe they have a unique role in leveraging innovation. Furthermore, we differentiate among a network based on internal and external cluster ties because SMEs in emerging countries can benefit from both kind of ties in different ways..

We argue that entrepreneurial firms seek to improve their competencies, on the one hand by establishing new network ties (Low & Abrahamson, 1997), and on the other by tapping resources from their existing ties (Lipparini & Sobrero, 1994). This is particularly true for ECTs because assimilating knowledge elements from non-local partners requires distinct capabilities to those required for assimilating knowledge from partners within a firm's own cluster. The former category of partners may exhibit greater differences not only in knowledge and expertise, but

also in attitudes and cultures compared to the latter category of partners. Therefore a strong entrepreneurial commitment is required to establish and maintain ECTs, to take chances with these ties, and to proactively uncover new opportunities (Covin & Miles, 1999). A firm with a high EO is therefore able to actively pursue knowledge and information available through its existing and new network ties.

Next, we distinguish the two well known traits of EO—proactiveness and risk taking—and examine their specific roles in generating innovative gains through ICTs and ECTs. Proactiveness represents a “first mover” orientation of the firm, encapsulating a firm’s ability to stay ahead of its competitors in anticipating future changes. Risk-taking orientation reflects a firm’s “tolerance of uncertainty” and capture a firm’s willingness to involve in and make risky investments. In a departure from extant research (Kreiser, 2011; Lee, et al., 2001; Stam & Elfring, 2008; Wiklund & Shepherd, 2003), we conceptualize these two EO traits as serving distinct functions in relation to a firm’s network ties. We propose that proactiveness exerts only an indirect effect on innovation through ICTs and ECTs, while risk taking affects innovation directly, as well as by reinforcing the positive innovation effect of a firm’s ties.

A firm with a high proactiveness orientation may be particularly adept at forging new ties because such a firm seeks out resources that would add value to the firm both in the present and in the future. The ability to read and anticipate changes in their environments is an eminent trait of entrepreneurial firms. Linkage within its own geographic areas (ICTs) constitutes an important social resource that generates a high level of trust and encourages the diffusion of tacit knowledge. While such knowledge transfers are easier, they may be mainly promoting incremental innovation (Capello, 1999). A proactive firm therefore may expand its network beyond its specific location so as to draw on the resources of organizations that may have different norms and practices (Rodan & Galunic, 2004). Such ties (ECTs) not only bring new insights to a firm, but also enable it to think out of the box such that the firm is able to adopt new technologies faster than would be otherwise possible.

Although a firm’s network ties constitute an important resource, such ties carry major risks. The firm’s partner may not be reciprocative in information exchanges, and, even if this is not the case, technological uncertainties may prevent exchange relationships from yielding the desired results. In spite of these risks, a firm that nurtures its ties through the necessary investments in relationship building and knowledge sharing might stand to benefit more from its linkages than a firm that makes little investments in its ECTs. While both ICTs and ECTs carry risks, the risks associated with the latter are likely to be higher due to the relatively higher differences in business practices, norms and such like between the partners. On the other hand, the pay offs to

risk taking may also be higher in respect to ECTs, given the potentially novel and non-redundant information that such ties bring about.

Our paper contributes to the literature on SMEs and innovation by integrating studies in the economic geography tradition that stress the role of a firm's network and those that emphasize the importance of entrepreneurial orientation, adopting the theoretical umbrella of the resource based view of the firm. While most studies on the effects of cluster, as well as of entrepreneurship, on innovative performance have been conducted in developed countries, particularly in the context of high-tech industries (Stam & Elfring, 2008), our study is carried out in the context of a low-tech manufacturing cluster in an emerging-economy—the footwear industry cluster in Cibaduyut, Indonesia.

THEORY AND HYPOTHESES

Role of Clusters for Innovation in SMEs: Intra- and Extra-Cluster Ties

An extensive body of research has highlighted that interactions within a regional cluster provide an effective platform for learning and innovation (Feldman, 1993; Gilbert, McDougall, & Audretsch, 2008; McCann & Folta, 2011). Firms within a cluster are usually a close-knit group that may include competitors, producers, suppliers, and distributors. Given their geographic proximity, these firms exhibit a high degree of interconnectedness between themselves and with local institutions such as government agencies, research institutes and universities (Porter, 2000). They benefit from the economies of agglomeration and joint action, giving them collective efficiency and therefore a competitive advantage over firms that are not co-located within a cluster (Schmitz, 1995). Scholars have increasingly emphasized that being part of a geographically concentrated cluster enables a firm easy access to new ideas partly due to the localized nature of knowledge spillovers (McCann & Folta, 2011). This follows the Schumpeterian view in which knowledge creation is conceptualized as a process of knowledge sharing within an actor's network. This view that knowledge is tacit and embodied in individuals has inspired research into knowledge sharing through face-to-face interactions in regional clusters (Nonaka & Takeuchi, 1995; Polanyi, 1966). A cluster is a particularly relevant platform for knowledge sharing in that it ensures trust and cooperation, contributing to collective learning, synergies and smooth exchange of knowledge. It therefore creates an informal network of organizations as proximity increases visibility and firms may easily get referrals from their existing partners to help form new partnerships (Gilsing, Nooteboom, Vanhaverbeke, Duysters,

& van den Oord, 2008). The degree of trust these informal ties provide is so high that it is common for firms in a cluster to visit their competitors' factories in order to gain know-how and new insights (K Nadvi, 1999). These benefits are not so easily accessed by firms that are located further away from the cluster. Clusters are therefore a significant locus of local economic development (Giuliani, 2002).

Empirical research has shown that firms that are part of a regional cluster are more successful, in terms of both innovation and profit, compared to similar firms that are not part of a cluster (Caniels & Romijn, 2005; Oerlemans, Meeus, & Boekema, 2001; Schoales, 2006; Simmie, 2004). Caniels & Romijn (2005) show that ICTs expedite the flow of knowledge between the participating firms, enhancing their innovative capabilities. Creative clusters are shown to contribute to local economic development by enhancing firm productivity, thereby supporting high local wages (Schoales, 2006). Almeida & Kogut (1999) found that the development of clusters in the U.S. computer industry in the 1980s led to increased innovation and industry rejuvenation. Gemser & Wijnberg (1996) found that the competitive strategy of the Italian furniture industry involved continuous improvement and product differentiation. This was made possible by the presence of industrial districts consisting of a network of SMEs and loosely organized families. Studies in the context of emerging economies are far fewer, but they too suggest that clusters enhance the competitive advantage of SMEs (Caniels & Romijn, 2003; Schmitz & Nadvi, 1999).

In this study we aim to contribute to ongoing debates regarding the impact of clusters on innovation. Among others, Simmie (2004) and Romijn and Albaladejo (2002) found that networks are key to the success of clustered firms. In this study we want to take the concept of networks one step further. We now distinguish among intra cluster ties (ICTs) and extra cluster ties (ECTs). We argue that ICTs and ECTs can be the sources of distinct knowledge. Therefore, we see that ICT and ECT development should be treated as an investment that enhances innovation.

While research on clusters have traditionally focused on ICTs, scholars have increasingly recognized that knowledge trapped within a cluster can decay and become obsolete (Boschma, 2005; Cantwell & Iammarino, 2003; Giuliani & Bell, 2005). Market trends and technologies change rapidly and continuously, while intra-cluster knowledge flows may not be keeping pace with these changes. Therefore extending a firm's network beyond the cluster in which it is located is vital—it allows a firm to absorb knowledge that is not sufficiently well developed in its region. Access to resources both internal and external to the cluster gives a firm the

opportunity to combine and recombine diverse knowledge elements, thereby increasing the chances for successful innovative outcomes. Research has demonstrated that firms that maintain ECTs are looked upon for advice and up to date knowledge by fellow firms who do not maintain such ties (Giuliani, 2005). Such ties are particularly important to achieve sustained competitive advantage for firm which operate in lagging technology clusters in developing countries where local knowledge and competency are insufficient (Bell & Albu, 1999; Fontes, 2005). SMEs in emerging countries often lack resources for developing new knowledge themselves and most of their knowledge comes from learning from others (Tsui-Auch, 2003). The above arguments suggest that while proximity and trust between partners ensures exchange of fine-grained knowledge within a cluster, over-reliance on ICTs may only result in the absorption of redundant knowledge. Therefore, an SME's sustained innovative performance and long run competitive advantage hinges on its ability to complement the intense exchange of knowledge associated with its ICTs with ECTs that bring in information and knowledge that is locally not available (Bathelt, 2004; Cantner & Graf, 2008). However, while a firm's network is vital for innovation, we argue that a broader understanding of the link between the two requires taking into account certain entrepreneurial qualities of the firm that shape and influence the efficacy of a firm's linkages.

Interplay of ICTs and ECTs with Entrepreneurial Orientation

To be successful, a firm must possess a certain ability to continually build and nurture its network and to process and implement newly gathered knowledge and information. This ability is reflected in a firm's EO capabilities, defined as the extent to which top managers are inclined to take business-related risks and seek opportunity in anticipation of future demand (Covin & Slevin, 1988, 1991; Danny Miller, 1983). This definition captures respectively EO's two key characteristics that we focus on in this paper in relation to a firm's ties: risk taking and proactive action (Pérez-Luño, et al., 2011). Proactiveness refers to the active search for new opportunities, identifying them, assessing their potentials, and devising strategies to exploiting these potentials (Lumpkin & Dess, 1996). This is a particularly important trait in order to be able to pioneer new procedures, technologies, and products or services—an ability on which hinges the long term success of a firm (Christensen, 1997). Risk taking is a complementary EO characteristic that reflects the commitment to high-risk investment or the willingness to invest resources into unpredictable opportunities, after they have been identified by proactive-oriented firms. Studies affirm that a successful entrepreneur makes calculated risks for potentially rewarding future benefits (Low & Abrahanson, 1997). In short, proactiveness and risk taking are two important

features that shape how a firm acquire and utilize its resources for achieving success in the long run. Given that network ties represent a critical resource for SMEs, particularly in emerging economies, it is important to understand the interplay between EO and a firm's network ties.

In this paper therefore we attempt to integrate the theories related to geographical clusters that emphasize the importance of ICTs and ECTs (Giuliani & Bell, 2005) and the literature on EO that stresses the role of an organization's entrepreneurial culture for firm success (Lumpkin & Dess, 1996). To the best of our knowledge this is the first study to look into the specific role of proactiveness and risk taking in relation to a firm's ICTs and ECTs. However, prior literature does emphasize how a firm's absorptive capacity (Larrañeta, Zahra, & González, 2012) and the social capital its network creates (Stam & Elfring, 2008) exerts a contingent effect on the link between EO and performance. Our paper extends this line of research by differentiating the influences of proactiveness and risk taking on a firm's network ties (ICTs and ECTs) in the specific context of an emerging-economy, low-tech manufacturing cluster. While proactiveness and risk-taking orientation both contribute to innovation and enhanced firm performance, we suggest they do so in distinct ways. In particular we argue that whereas proactive orientation exerts its influence in establishing network ties, risk taking ensures that the firm makes the necessary commitments in order to derive value from its network ties. We discuss these two influences in turn.

Proactiveness and Innovation: The Mediating Roles of ICTs and ECTs

We argue that proactiveness contributes to a firm's innovative performance indirectly through the firm's ICTs and ECTs because firms with high levels of proactiveness find opportunities, anticipate future developments, and identify new trends and available niches faster than their competitors (Lumpkin & Dess, 1996). Such firms accordingly seek out network ties more actively for accessing resources that are geared towards meeting the expected challenges and opportunities. The resulting ICTs and ECTs therefore represent an important resource for the firm (Eisenhardt & Schoonhoven, 1996), with more such ties providing access to potentially greater varieties of knowledge (Cross & Jonathon, 2004). By focusing on the specific EO trait of proactive orientation, we refine prior research which has shown that EO, in general, plays an important role in establishing inter-organizational networks that glue a firm's internal expertise with externally acquired resources (Lipparini & Sobrero, 1994).

Proactive-oriented firms may also be more adept at leveraging their existing ties to forge new ties. We know from the network literature (e.g. Gulati, 1999) that a firm's existing network

enables it to establish new linkages through, among other factors, referrals by its current partners and the visibility that the current ties provide. We suggest that proactive behavior ensures that a firm is able to seek out referrals and leverage its visibility in the cluster such that it forms new partnerships in response to changes in external environments faster than firms lacking such abilities. Therefore, we propose that proactive orientation enhances innovative performance through its effect on ICTs and ECTs:

H1a. The effect of a firm's proactiveness on innovative performance is mediated by its intra-cluster ties.

H1b. The effect of a firm's proactiveness on innovative performance is mediated by its extra-cluster ties.

How Does Risk Taking Moderate the Effect ICTs and ECTS on Innovative performance?

Establishing network ties do not necessarily mean that a firm is fully tapping into the resources available to it through such ties. The underlying relationships are reciprocal so the extent to which a firm can access resources hinges partly on the extent to which it is willing to commit its own resources. However, such commitments carry an inherent risk. In the first place partners may renege on their promises so the firm may stand to lose the resources it has committed. Another significant risk is the uncertainty associated with innovation (Zahra & Covin, 1995; Zahra, Nielsen, & Bogner, 1999). Even if a firm's network partners reciprocate in line with the firm's expectations, knowledge exchanges may not generate valuable innovative outcomes. As regards an acceptable level of risk, psychologists posit that this level may be chosen as a compromise between the desire for success and the desire to avoid risk (Mandel, 2003). Too low a risk tolerance will prevent a firm from making progress (Naldi, Nordqvist, Sjoberg, & Wiklund, 2007). As observed by Ward (1997, p. 323) "without risk taking ... the prospects for business growth wane". This suggests that some level of risk taking is essential for effective use of firms' ICTs and ECTs. When ICTs and ECTs are supported by an adequate degree of risk taking though investment of time, money, and effort, the rate of innovation will increase. The interplay between risk taking on the one hand and ICTs and ECTs on the other can contribute to innovation, right from the discovery of an opportunity or the conception of an idea to its planning and implementation.

Nevertheless, we suggest that the extent to which risk taking is essential can vary for ICTs and ECTs. Within a cluster there is certain degree of mutual interdependence, implying that

firms need to honor their commitments or they may face sanctions from others within the cluster. Within-cluster ties may therefore be compared to dense networks characterized by repeated interaction and a high degree of trust between partners (e.g. Gordon, Kogut, & Shan, 1997; Gulati & Gargiulo, 1999; Uzzi, 1997). Greater trust and the threat of sanction can make risk taking less salient for ICTs compared to for ECTs. We therefore propose the following two related hypotheses.

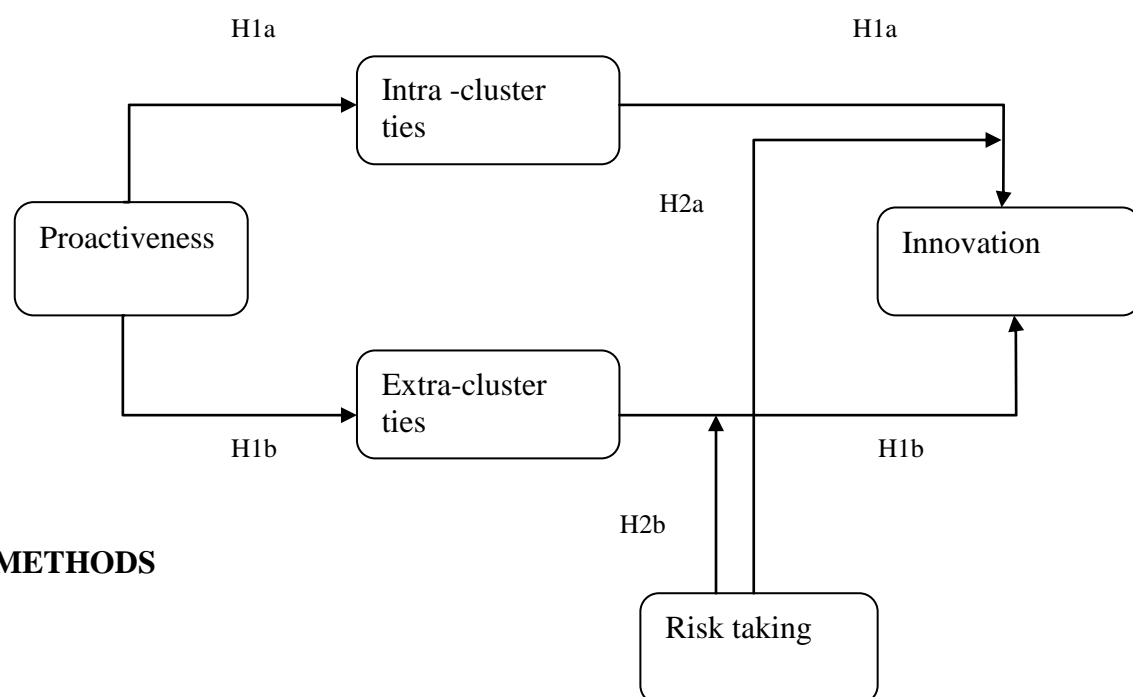
H2a. A firm's risk-taking orientation positively moderates the positive impact of its network ties (both ICTs and ECTs) on innovative performance.

H2b. A firm's risk-taking orientation has a greater moderating effect on the impact of its ECTs, compared to its ICTs, on innovative performance.

Hypothesized Research Model

Figure 1 shows the conceptual framework that explains the relationships proposed in our hypotheses, depicting how the interplay between ICTs, ECTs, proactiveness and risk taking affects innovation.

Figure 1 Innovative performance and the interplay between ICTs, ECTs, Proactiveness and Risk-Taking



METHODS

Research Setting

While many studies on SME clusters have been conducted in high-tech industries in developed countries (Stam & Elfring, 2008), our study is carried out in the context of a creative industry with low to intermediate technology- a footwear industry in the Cibaduyut manufacturing cluster in Indonesia. We chose Indonesia because its manufacturing SMEs are representative of those in other emerging countries, on which few studies exist. Our focal firms are located in a cluster with clear geographical boundaries and who operate similar technologies (Stam & Elfring, 2008). Why is this research setting interesting? First, this is a highly competitive footwear cluster so firms are compelled to produce innovative products. Without such products, it is difficult to get orders from distributors (Gunawan, 2011). Second, firms possess limited internal resources so ICTs and ECTs constitute key resources for the firms (Biggs & Messerschmidt, 2005).

Research Design and Data Collection

We collected the data in 2012 based on an extensive survey in this cluster, using questionnaires and interviews among owners and managers of the companies. Our sample is comprised of 120 owners/managers representing 120 footwear firms in Cibaduyut. As is typical in emerging economies there only exists limited information about footwear producers in this cluster; the official database of company addresses is at best incomplete. We combed through every area in Cibaduyut and compiled contact addresses. We then distributed questionnaires to all footwear producers that we found, and we followed this up with interviews. The resulting data set presents a near complete representation of firms in this cluster.

Measures and Validation

Innovative performance

Innovation is traditionally understood to mean the introduction of new goods, the use of new materials, the development of new methods of production, the opening of new markets, or the implementation of a new approach to organization (Schumpeter, 1934). In this paper, we considered the ability of firms to develop new products as a measure of innovative performance. New products are an important indicator of innovative performance (Katila & Ahuja, 2002) because they reflect a firm's ability to adapt to changes in markets and technologies (Schoonhoven, Eisenhardt, & Lyman, 1990) and they exert a significant impact on market share, market value, and firm survival (Banbury & Mitchell, 1995). Product innovation, which

underlies new products, may include improvements in features, materials, and components, the development of new software, enhanced user friendliness, and other aspects (OECD, 2005). We define product innovation in terms of changes in materials, features, and design; we did not consider changes in color and size as representing an innovation. We then used the number of new products introduced to the market during the preceding year as our indicator of innovative performance (Stam & Elfring, 2008).

Intra/Extra-Cluster Ties

We map ICTs and ECTs by determining the number of partners with which the producers interact (Giuliani & Bell, 2005). The boundary of the Cibaduyut cluster is clear, enabling us to easily differentiate between intra- and extra-cluster ties. We constructed ICTs and ECTs variables as the number of a firm's diverse set of partners, such as suppliers, distributors, competitors, research centres and universities, within and outside its cluster respectively. Both variables are expressed in logarithms (Leiponen & Helfat, 2011).

Proactiveness and Risk Taking

We followed the approach of Covin and Slevin (1989) to measure proactiveness and risk taking. Respondents were asked about their firms' proactive-orientation and risk-taking behavior on a scale of 1, "strongly disagree", to 5, "strongly agree". We derived multi-item variables using factor analysis, testing for their reliability and validity. We confirmed the reliability of these indicators by computing the Cronbach-alpha coefficient, which was respectively 0.80 for proactiveness and 0.78 for risk taking—well above the minimum accepted value of 0.70 (Field, 2013). We further verified the validity of these indicators, finding a statistically significant correlation of proactiveness and risk taking with innovative performance respectively ($r=0.30$, $p<0.01$) and ($r=0.30$, $p<0.01$)).

Control Variables

We use a number of variables as controls. We used the age of the owner or manager to control for the effect of experience on innovative performance. Older owners or managers can be trapped in an entrenched operational system such that they might be slow to adapt to new developments, resulting in slower absorption of new knowledge (Cohen & Levinthal, 1990). On the other hand, young owners and managers are less likely to have established routines and may be engaged with a flexible network of partners, making them more open to new ideas, resources, and opportunities. We also included the education level of owner/ manager to control

for differences in the ability to absorb and manage information. Better educated owners/managers may be more capable of obtaining new knowledge, and of adapting to changing technologies and market signals. We used the number of employees to account for the effect of differences in the size of the firm. Larger firms may employ more skilled human resources, be more knowledgeable, have more access to knowledge, and have the appropriate technology or the ability to acquire it (Damanpour, 1996). On the other hand, large firms are typically more formalized with standardized managerial practices which can hamper innovation (Hitt, Hoskisson, & Ireland, 1990). While small organizations may be more flexible, which means they have a greater ability to adapt to changing environments, they may be constrained by limited access to facilities and financial resources.

Analytical Approach

We employ ordinary least squares (OSL) estimation method. The dependent variable follows a normal distribution: the skewness and kurtosis values were less than 1.5—below the acceptable limit for normal distribution of ± 2 (George & Mallery, 2011)—indicating that the data are close to normal. We employed a hierarchical regression analysis, with alternative models with and without interaction terms. We ensured that there was no serious multicollinearity between the variables: the variance inflation factor was below three, and the tolerance values were close to 1 (Barrow, 2009). As recommended by Aiken and West (1991), we applied mean centering to the variables used for creating interaction terms.

RESULTS

Table 1 shows the descriptive statistics of the variables used in the econometric model. The average number of innovative products is about 7, with a maximum of 16 and a minimum of 2. The average number of ICTs is about 69 (4.2 in logarithmic scale), while that of ECTs is much smaller at about 5. Correlation coefficients are all within acceptable limits, further confirming the absence of multicollinearity.

Table 1
Means, Standard Deviations, and Correlations^a

Variable	Mean	s.d.	Min	Max	1	2	3	4	5	6	7
1. Number of new products	7.47	2.99	2	16							
2. ICT ^b	4.23	1.76	1	91	0.11						
3. ECT ^b	1.64	1.95	0	17	0.35**	0.36**					
4. Proactive orientation	10.07	1.76	8	15	0.30**	0.29**	0.54**				
5. Risk-taking orientation	6.16	1.22	4	9	0.30**	0.29**	0.39**	0.47**			
6. Age of owner/manager	2.49	0.71	< 30	>50	0.01	0.20	0.30**	0.26**	0.01		
7. Education of owner/manager	2.85	0.53	Ju. Hi. school	Bachelor	0.29**	0.04	0.13	0.27**	0.18*	-0.18*	
8. Firm size	1.57	0.51	<5	21-50	0.09	0.40**	0.45**	0.46**	0.25**	0.24**	0.13

a. n=120

b. Log-transformed

*p < 0.05, **p < 0.01

Two-tailed tests

Results of the regression analysis are reported in Table 2. To test whether the variables ICT and ECT mediate the effect of proactiveness on innovative performance (H_1), we follow the three-step procedure suggested by Baron & Kenny (1986). In model 1, we include the two EO variables, proactiveness and risk taking, along with the control variables. As expected, the coefficients of both these EO variables are positive and significant. In the next step, we regress the same set of explanatory variables in turn on ICT and ECT. We find a significant positive coefficient for proactiveness in the ECT model ($\beta=0.30$, $p<0.01$) (model 3), but not in the ICT model ($\beta=0.09$, n.s.) (model 2). This is a first indication that while ECTs may be mediating the effect of proactiveness on innovative performance, ICTs may not be playing such a role. The final step is to run the innovative performance model with both the EO variables and the network variables (model 4). The proactiveness variable is not significant anymore ($\beta=0.09$, n.s), unlike in model 1. Furthermore, the coefficient of ECT variable is positive and significant ($\beta=0.30$, $p<$

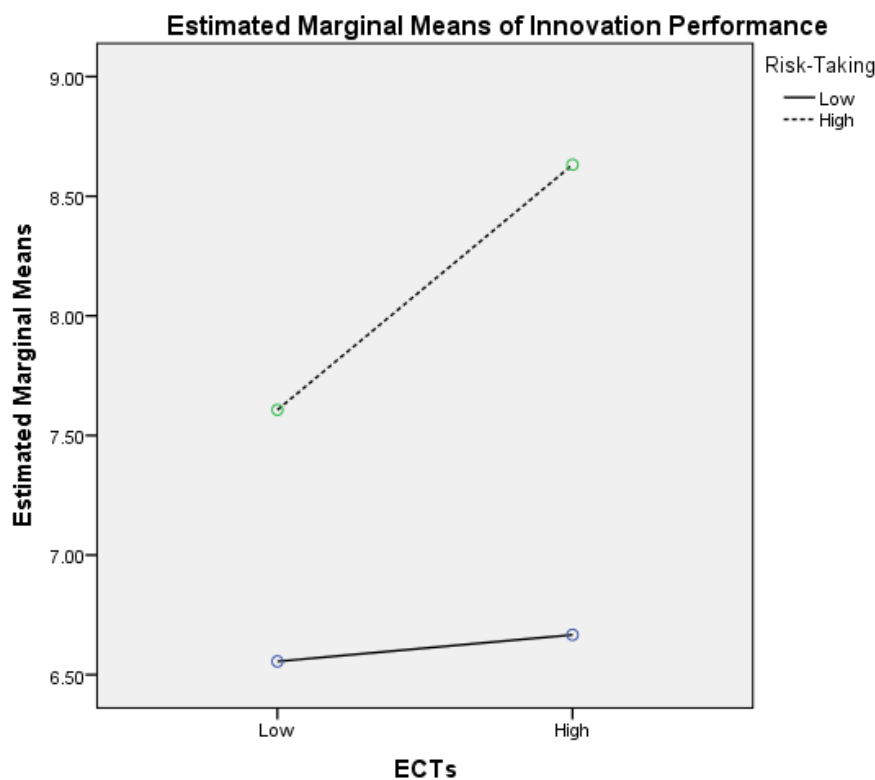
0.01), while that of ICTs is not ($\beta=-0.16$, n.s.). This confirms that ECTs fully mediates the effect of proactiveness on innovative performance, in support of our hypothesis 1b. ICTs on the other hand does not play a mediating role, contrary to our hypothesis 1a.

Table 2
Result of OLS Regression Analyses

Variable	Hyp	Model 1	Model 2	Model 3	Model 4	Model 5
		Model 1 Innov	Model 2 ICT	Model 3 ECT	Model 4 Innov	Model 5 Innov
Controls						
Age of owner/ manager		0.01	-0.11	0.17*	-0.04	-0.06
Education of owner/ manager		0.22**	-0.08	0.01	0.21*	0.18*
Firm Size		-0.78	0.35***	0.21**	-0.14	-0.17+
Risk taking		0.19*	0.17+	0.19*	0.14	0.21*
Hypothesis variables						
Proactiveness	H1a &b	0.18+	0.09	0.30**	0.09	0.03
ICT ^b	H1a				-0.16	0.31*
ECT ^b	H1b				0.30**	0.13
Two-way interactions						
ICT x Risk taking	H2a					-0.41**
ECT x Risk taking	H2b					0.22*
R ²		0.17	0.22	0.38	0.22	0.34
Adjusted R ²		0.13	0.18	0.36	0.17	0.28
F		4.67***	6.28***	14.45***	4.61***	6.17***
N		120	120	120	120	120
^a Standardized coefficients are reported ^b Log-transformed + p < 0.10 *p < 0.05 **p < 0.01 ***p < 0.001						

Next, to test whether risk taking moderates the effect of ICTs and ECTs on innovative performance, we added to the variables in model 4, the interaction terms ICT x Risk taking and ECT x Risk taking (model 5). We find a positive and significant coefficient for ECT x Risk taking ($\beta=0.22$, $p<0.05$) which partially support our hypothesis 2a. However in contrast to our assumption in this hypothesis we find a negative and significant coefficient for the variable ICT x Risk taking ($\beta=-0.41$, $p<0.01$). These results provide full support for our hypothesis 2b which stated that a firm's risk-taking orientation has a greater moderating effect on the impact of the firm's ECTs, compared to its ICTs, on innovative performance. Coming to the results on control variables, we find that education of the manager has a positive impact on performance, while firms with younger managers also tend to perform better (models 1,4,5). A better educated manager gives an SME a greater ability to understand new knowledge, recognize its value and to commercialize it (Qian & Acs, 2013). There is also partial evidence that small-sized firms tend to be more innovative. This is in line with our understanding that smaller firms display greater agility and flexibility in adopting new innovative practices, giving them a competitive advantages over larger firms (Robertson & Langlois, 1995).

Figure 2 The Moderating Effect of Risk-Taking on the Relationship between ECTs and Innovative Performance



From figure 2 we can better understand the extent to which risk taking moderates the effect of ECTs on innovative performance. It shows the predicted innovative performance across a range (from low to high) of ECTs for high- and low-risk taking firms. The horizontal axis measures the number of ECTs, and the dotted and solid lines respectively represent firms with high and low risk taking. Both lines have a positive slope indicating the positive effect of ECTs on innovative performance. However, the slope of the dotted line is much more steep than that of the other line, underscoring that risk taking substantially moderates the impact of ECTs on innovative performance. This suggests that firms that are greater risk takers benefit the most from increasing the number of their ECTs.

Robustness checks

In addition to the tests described earlier, we conducted further tests to conclude that the assumption of BLUE (Best Linier Unbiased Estimator) of OLS is satisfied (Gujarati, 2003). The Koenker test with a Chi-Square statistic of 10.79 ($p=0.29$), and the Breusch-Pagan test (Chi-Square 10.74 ($p=0.29$)) indicate that the assumption of homoscedasticity is not violated because the p is bigger than 0.05. We tested for potential outlier problems and found that the value of Cook's Distance is 0.23, which is lower than the usually accepted limit of one (Tabachnick & Fidell, 2007), thereby indicating the absence of significant outliers.

DISCUSSION

In this paper, we integrated the literature on entrepreneurial orientation with that on regional innovation and network ties. The EO literature identifies proactiveness and risk taking as two key EO characteristics (Lee, et al., 2001; Stam & Elfring, 2008; Wiklund & Shepherd, 2005), while the literature on innovation in regional clusters stresses the importance of ICTs and, more importantly, ECTs (Giuliani & Bell, 2005). We argued that the EO traits of risk taking and proactiveness interact differently with a firm's ICTs and ECTs. On the one hand, proactiveness is likely to influence innovative performance indirectly through the creation of a firm's ICTs and ECTs. Risk taking on the other hand positively moderates the impact of ICTs and ECTs.

We empirically tested our conjectures on a sample of 120 SMEs in a creative-industry manufacturing cluster in an emerging economy, Indonesia. Our analysis, based on primary data collected through interviews and questionnaires, provided mixed support for our hypotheses. We found that ECTs mediate the proactive orientation of firms. A proactive-oriented firm is particularly adept at seeking resources from outside its cluster, increasing the diversity and

novelty of knowledge at its disposal (Larrañeta, et al., 2012). This in turn enhances the potential number of new knowledge combinations that the firm can create, resulting in improved innovative performance (Chen & Huang, 2009; Tödtling, Lehner, & Kaufmann, 2009). On the other hand, we did not find the mediating role of ICTs on the link between proactiveness and innovative performance. One possible explanation is that the knowledge in a cluster might be saturated because “everyone knows what everyone knows” (Gilsing, et al., 2008). Being overembedded in their cluster though ICTs may induce in firms a certain satisfaction with the status-quo such that firms may not be keen to actively search for new knowledge. Proactive firms, however, are future oriented, prepared to meet future challenges and exploit future opportunities, and therefore may engage actively in search of new ideas outside of their cluster, though ECTs.

We found that risk taking strengthens the relationship between ECTs and innovative performance. For SMEs in particular, external knowledge is a key source of innovation (Jacob & Szirmai, 2007; Lipparini & Sobrero, 1994). However, external knowledge sourcing is inherently risky due to relative unfamiliarity of a firm’s partners and the resulting uncertainty about the outcomes (Dess & Lumpkin, 2005; Lee, et al., 2001; Walter, Auer, & Ritter, 2006; Zahra, et al., 1999). In this context, firms that take calculated risk are able to invest resources in their ECTs such that they are able to draw potentially valuable external resources. We however found that risk taking negatively moderates the effect of ICT on innovative performance. Too much resource commitment for within-cluster knowledge sharing may be counterproductive as this may result only in the diffusion of redundant knowledge instead of making new knowledge available to the firm. This underscores a concern raised in the literature that being located within a cluster is no guarantee for being successful (Schmitz & Nadvi, 1999). This presents a particular challenge for SMEs that are located in regional clusters, which are characterized by limited inter-firm specialization, and scarce joint initiatives in marketing, production, distribution and technological development. Thus a key message of our study is that SMEs in emerging economies should actively develop inter-organizational networks that go beyond the confines of the region in which they are located. Committing resources to nurture these networks, and increasing the diversity of a firm’s knowledge intake, can be vital for successful innovative outcomes.

Limitations and Future Research

Our study is not without limitations, but also provides new opportunities for future research. First, the data we used, although original and derived from field research, is cross-sectional. This has prevented us from examining the effect of changes over time in firm behavior on innovative performance. Collecting longitudinal data in the emerging economy context is particularly challenging, given the lack of governmental level initiatives to this end.

Second, we examined innovative performance using the number of new products introduced (Katila & Ahuja, 2002). It would be interesting to differentiate between radical vs. incremental innovation and examine how different configurations of EO and network characteristics affect these, especially in the context of a more technologically advanced industry.

Third, in this study we used a single industry, footwear manufacturing. This may limit the generalizability of the results to other industries. Nevertheless, the lessons drawn from this study may be relevant for similarly low tech but creative industries that constitute a major share of manufacturing in most developing countries.

Fourth, it was beyond the scope of this study to account for the heterogeneity of a firm's network of ICTs and ECTs, encompassing suppliers, distributors, government agencies, research centers, financial institutions, and universities. In future research we hope to explore the consequences of partner heterogeneity in the context of emerging-economy SMEs.

References

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park: Sage.
- Almeida, P., & Kogut, B. (1999). Localization of Knowledge and the Mobility of Engineers in Regional Networks. *Manage. Sci.*, 45(7), 905-917. doi: 10.1287/mnsc.45.7.905
- Avlonitis, G. J., & Salavou, H. E. (2007). Entrepreneurial orientation of SMEs, product innovativeness, and performance. *Journal of Business Research*, 60, 566- 575.
- Banbury, C. M., & Mitchell, W. (1995). The Effect of Introducing Important Incremental Innovations on Market Share and Business Survival. *Strategic Management Journal*, 16(Special Issue: Technological Transformation and the New Competitive Landscape , John Wiley & Sons), 161-182.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: conceptual, stretegic, and statistical consideration *Journal of Personality and Social Psychology*, 51(6), 1173- 1182.
- Barrow, M. (2009). *Statistics for economics, accounting and business studies* (Fifth ed.). United Kingdom: Prentice Hall.
- Bathelt, H. (2004). Toward a multidimensional conception of clusters: The case of the Leipzig Media Industry, Germany. In: *Cultural Industries and the Production of Culture Cultural Industries and the Production of Culture* (pp. 147-168). Germany: Routledge: London and New York. .
- Bell, M., & Albu, M. (1999). Knowledge systems and technological dynamism in industrial clusters in developing countries. *World Development*, 27(9), 1715- 1734.
- Biggs, S., & Messerschmidt, D. (2005). Social responsibility in the growing handmade paper industry of Nepal. [doi: 10.1016/j.worlddev.2005.06.002]. *World Development*, 33(11), 1821-1843.
- Boschma, R. (2005). Proximity and Innovation: A Critical Assessment. *Regional studies* 39(1), 61-74.
- Boso, N., Cadogan, J. W., & Story, V. M. (2012). Entrepreneurial orientation and market orientation as drivers of product innovation success: A study of exporters from a developing economy. *International Small Business Journal, Advance online publication*.
- Caniels, M., & Romijn, H. A. (2003). SME Clusters, Acquisition of Technological Capabilities and Development: Concepts, Practice and Policy Lessons. *Journal of Industry, Competition and Trade*, 3(3), 187-210.

- Caniels, M., & Romijn, H. A. (2005). What drives innovativeness in industrial clusters? Transcending the debate. *Cambridge Journal of Economics*, 29, 497-515.
- Cantner, U., & Graf, H. (2008). Interaction structures in local innovation systems. *Jena Economic Research Papers*.
- Cantwell, J., & Iammarino, S. (2003). *Multinational corporations and European regional systems of innovation*.: Routledge, London, UK.
- Capello, R. (1999). Spatial transfer of knowledge in high technology milieux: learning versus collective learning processes. *Regional Studies*, 33(4), 353-365.
- Chen, C.-J., & Huang, J.-W. (2009). Strategic human resource practices and innovation performance — The mediating role of knowledge management capacity. [doi: 10.1016/j.jbusres.2007.11.016]. *Journal of Business Research*, 62(1), 104-114.
- Christensen, C. M. (1997). *The Innovators Dilemma: when new technologies cause great firms to fail*: Harvard Business School Press, Boston, Massachusetts.
- Cohen, W., & Levinthal, D. (1990). Absorptive capacity: a new perspective on learning and innovation. *Administrative Science Quarterly*, 35(1), 128-152.
- Covin, J., & Miles, M. (1999). Corporate Entrepreneurship and the Pursuit of Competitive Advantage. *Entrepreneurship: Theory & Practice*, 23(3), 47-63.
- Covin, J., & Slevin, D. (1988). THE INFLUENCE OF ORGANIZATION STRUCTURE ON THE UTILITY OF AN ENTREPRENEURIAL TOP MANAGEMENT STYLE. *Journal of Management Studies*, 25(3), 217-234.
- Covin, J., & Slevin, D. (1991). A Conceptual Model of Entrepreneurship as Firm Behavior. *Entrepreneurship: Theory and Practice*, 16(1), 7-25.
- Covin, J., & Slevin, D. P. (1989). Strategic management of small firms in hostile and benign environments. *Strategic Management Journal*, 10, 75-87.
- Cross, R., & Jonathon, N. C. (2004). Tie and Network Correlates of Individual Performance in Knowledge-Intensive Work. *The Academy of Management Journal*, 47(6), 928-937.
- Damanpour, F. (1996). Organizational Complexity and Innovation: Developing and Testing Multiple Contingency Models. *Management Science*, 42(5), 693-716.
- Dess, G. G., & Lumpkin, G. T. (2005). The Role of Entrepreneurial Orientation in Stimulating Effective Corporate Entrepreneurship. *Academy of Management Journal*, 19(1), 147-156.
- Eisenhardt, K. M., & Schoonhoven, C. B. (1996). Resource-Based View of Strategic Alliance Formation: Strategic and Social Effects in Entrepreneurial Firms. *Organization Science*, 7(2), 139-150.

- Feldman, M. (1993). An examination of the geography of innovation. *Oxford Journal* 2(3), 451-470.
- Field, A. (2013). *Discovering Statistics using IBM SPSS Statistics* (Vol. Fourth Edition). London: Sage publication.
- Fontes, M. (2005). Distant Networking: The Knowledge Acquisition Strategies of ‘Out-cluster’ Biotechnology Firms. *European Planning Studies* 13(6), 899-920.
- Gemser, G., & Wijnberg, N. M. (1996). *Horizontal networks and value appropriation from innovations: the case of Italian design furniture*, in: Ebert, R.J., L. Franz (eds.), , Orlando.
- George, D., & Mallery, P. (2011). *SPSS for Windows Step by Step: A Simple Guide and Reference*: Pearson.
- Gilbert, B. A., McDougall, P. P., & Audretsch, D. B. (2008). Clusters, knowledge spillovers and new venture performance: An empirical examination. *Journal of Business Venturing*, 23(4), 405-422.
- Gilsing, V., Nooteboom, B., Vanhaverbeke, W., Duysters, G., & van den Oord, A. (2008). Network embeddedness and the exploration of novel technologies: Technological distance, betweenness centrality and density. *Research Policy*, 37(10), 1717-1731.
- Giuliani, E. (2002). Cluster Absorptive Capability: An Evolutionary Approach For Industrial Clusters In Developing Countries. *Danish Research Unit for Industrial Dynamics*.
- Giuliani, E. (2005). Cluster Absorptive Capacity: Why do Some Clusters Forge Ahead and Others Lag Behind? *European Urban and Regional Studies* 12(3), 269-288.
- Giuliani, E., & Bell, M. (2005). The micro-determinants of meso-level learning and innovation: evidence from a Chilean wine cluster. [doi: 10.1016/j.respol.2004.10.008]. *Research Policy*, 34(1), 47-68.
- Gordon, W., Kogut, B., & Shan, W. (1997). Social Capital, Structural Holes and the Formation of an Industry Network. *Organization Science*, 8(2), 109-125.
- Gujarati, D. N. (2003). *Basic Econometrics* (Fourth ed.). New York: McGraw- Hill Higher Education.
- Gulati, R. (1999). Network location and learning: the influence of network resources and firm capabilities on alliance formation. *Strategic Management Journal*, 20(5), 397-420.
- Gulati, R., & Gargiulo, M. (1999). Where Do Interorganizational Networks Come From? *American Journal of Sociology*, 104(5), 1439-1493.

- Gunawan, T. (2011). *Investigation of clustering impact to SMEs' innovation in Indonesia*. Paper presented at the 2nd International Conference on International Business (ICIB), University of Macedonia.
- Hitt, M. A., Hoskisson, R. E., & Ireland, R. D. (1990). Mergers and Acquisitions and Managerial Commitment to Innovation in M-Form Firms. *Strategic Management Journal*, 11(Corporate Entrepreneurship), 29-47.
- Jacob, J., & Szirmai, A. (2007). International knowledge spillovers to developing countries: the case of Indonesia. *Review of Development Economics*, 11(3), 550-565.
- Katila, R., & Ahuja, G. (2002). Something Old, Something New: A Longitudinal Study of Search Behavior and New Product Introduction. *The Academy of Management Journal* 45(6), 1183-1194.
- Kreiser, P. M. (2011). Entrepreneurial Orientation and Organizational Learning: The Impact of Network Range and Network Closure. *Entrepreneurship Theory and Practice*, 35, 1025-1050.
- Larrañeta, B., Zahra, S. A., & González, J. L. G. (2012). Enriching strategic variety in new ventures through external knowledge. *Journal of Business Venturing*, 27(4), 401-413.
- Lee, C., Lee, K., & Pennings, J. M. (2001). Internal capabilities, external networks, and performance: a study on technology-based ventures. *Strategic Management Journal*, 22(6-7), 615-640. doi: 10.1002/smj.181
- Leiponen, A., & Helfat, C. E. (2011). Location, Decentralization, and Knowledge Sources for Innovation. *Organization Science*, 22(3), 641-658.
- Lipparini, A., & Sobrero, M. (1994). The glue and the pieces: Entrepreneurship and innovation in small-firm networks. *Journal of Business Venturing*, 9(2), 125-140.
- Low, M. B., & Abrahamson, E. (1997). Movement, bandwagon, and clones: Industry evolution and the entrepreneurial process. *Journal of Business Venturing*, 12, 435-457
- Lumpkin, G. T., & Dess, G. G. (1996). Clarifying the Entrepreneurial Orientation Construct and Linking It to Performance. *The Academy of Management Review*, 21(1), 135-172.
- Mandel, N. (2003). Shifting Selves and Decision Making: The Effects of Self-Construal Priming on Consumer Risk-Taking. *Journal of Consumer Research*, 30(1), 30-40.
- McCann, B. T., & Folta, T. B. (2011). Performance differentials within geographic clusters. *Journal of Business Venturing*, 26(1), 104-123.

- Mesquita, L. F., & Lazzarini, S. G. (2008). Horizontal and Vertical Relationships in Developing Economies: Implications for SMEs' Access to Global Markets. *Academy of Management Journal*, 51(2), 359-380.
- Miller, D. (1983). The correlates of entrepreneurship in three types of firms. *Management Science*, 29, 770-791.
- Miller, D., & Friesen, P. (1982). Innovation in conservative and entrepreneurial firms: Two models of strategic momentum. *Strategic Management Journal*, 3, 1-25.
- Nadvi, K. (1999). Collective Efficiency and Collective Failure: The Response of the Sialkot Surgical Instrument Cluster to Global Quality Pressures. *World Development*, 27(9), 1605-1626.
- Nadvi, K. (1999). Shifting ties: social networks in the surgical instrument cluster of Sialkot-Development and Change-Pakistan. *Development and Change*, 30(1), 141-175.
- Naldi, L., Nordqvist, M., Sjoberg, K., & Wiklund, J. (2007). Entrepreneurial orientation, risk taking, and performance in family firms. *Family Business Review* 20(1), 33- 47.
- Nonaka, I., & Takeuchi, H. (1995). *The knowledge- creating company*: Oxford University Press: New York.
- OECD. (2001). Devolution and Globalisation: Implications for Local Decision-makers. Paris.
- OECD. (2005). Raising innovation performance. *Economic Surveys*, 2, 153-186.
- Oerlemans, L. A. G., Meeus, M. T. H., & Boekema, F. W. M. (2001). Firm clustering and innovation: Determinants and effects. *Papers in Regional Science*, 80, 337- 356.
- Pérez-Luño, A., Wiklund, J., & Cabrera, R. V. (2011). The dual nature of innovative activity: How entrepreneurial orientation influences innovation generation and adoption. *Journal of Business Venturing*, 26(5), 555-571.
- Polanyi, M. (1966). *The tacit dimension*: New York: Anchor Day Books.
- Porter, M. E. (2000). Location, Competition, and Economic Development: Local Clusters in a Global Economy. *Economic Development Quarterly*, 14(1), 15-34.
- Qian, H., & Acs, Z. (2013). An absorptive capacity theory of knowledge spillover entrepreneurship. *Small Business Economics*, 40(2), 185-197.
- Robertson, P. L., & Langlois, R. N. (1995). Innovation, networks, and vertical integration. *Research Policy*, 24(4), 543-562.
- Rodan, S., & Galunic, C. (2004). More than network structure: how knowledge heterogeneity influences managerial performance and innovativeness. *Strategic Management Journal*, 25(6), 541-562.

- Romijn, H., & Albaladejo, M. (2002). Determinants of innovation capability in small electronics and software firms in southeast England. *Research Policy*, 31(7), 1053-1067.
- Romijn, H., & Albu, M. (2002). Innovation, Networking and Proximity: Lessons from Small Technology Firms in the UK. *Policy Review Section*, 81-86.
- Schmitz, H. (1995). Collective efficiency: growth path for small scale industry. *Journal of Development Studies*, 31(4).
- Schmitz, H., & Nadvi, K. (1999). Clustering and Industrialization: Introduction. *World Development*, 27(9), 1503-1514.
- Schoales, J. (2006). Alpha Clusters: Creative Innovation in Local Economies. *Economic Development Quarterly*, 20(2), 162-177.
- Schoonhoven, C. B., Eisenhardt, K. M., & Lyman, K. (1990). Speeding Products to Market: Waiting Time to First Product Introduction in New Firms. *Administrative Science Quarterly*, 35(1), 177-207.
- Schumpeter, J. A. (1934). *The Theory of Economic Development*. Cambridge: Harvard University Press.
- Simmie, J. (2004). Innovation and Clustering in the Globalised International Economy. *Urban Studies*, 41(5/6), 1095-1112.
- Stam, W., & Elfring, T. (2008). Entrepreneurial orientation and the performance of high-technology ventures: The moderating role of intra- and extraindustry social capital. *Academy of Management Journal*, 51(1), 97-111.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using Multivariate Statistics* (Fifth ed.). Boston: Pearson Education. Inc.
- Tödtling, F., Lehner, P., & Kaufmann, A. (2009). Do different types of innovation rely on specific kinds of knowledge interactions? [doi: 10.1016/j.technovation.2008.05.002]. *Technovation*, 29(1), 59-71.
- Tsui-Auch, L. S. (2003). Learning Strategies of Small and Medium-Sized Chinese Family Firms : A Comparative Study of Two Suppliers in Singapore *Management Learning*, 34(2), 201-220.
- Uzzi, B. (1997). Social Structure and Competition in Interfirm Networks: The Paradox of Embeddedness. *Administrative Science Quarterly*, 42(1), 35-67.
- Walter, A., Auer, M., & Ritter, T. (2006). The impact of network capabilities and entrepreneurial orientation on university spin-off performance. *Journal of Business Venturing*, 21(4), 541-567.

- Ward, J. L. (1997). Growing the Family Business: Special Challenges and Best Practices. *Family Business Review*, 10(4), 323-337. doi: 10.1111/j.1741-6248.1997.00323.x
- Wernerfelt, B. (1984). A Resource-Based View of the Firm. *Strategic Management Journal*, 5(2), 171-180.
- Wiklund, J., & Shepherd, D. (2003). Knowledge-based resources, entrepreneurial orientation, and the performance of small and medium-sized businesses. *Strategic Management Journal*, 24(13), 1307-1314. doi: 10.1002/smj.360
- Wiklund, J., & Shepherd, D. (2005). Entrepreneurial orientation and small business performance: a configurational approach. *Journal of Business Venturing*, 20(1), 71-91.
- Zahra, S. A., & Covin, J. G. (1995). Contextual influences on the corporate entrepreneurship-performance relationship: A longitudinal analysis. [doi: 10.1016/0883-9026(94)00004-E]. *Journal of Business Venturing*, 10(1), 43-58.
- Zahra, S. A., Nielsen, A. P., & Bogner, W. C. (1999). Corporate Entrepreneurship, Knowledge, and Competence Development. *Entrepreneurship Theory and Practice*, 169-189.