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Conference Paper

To what extent temporary collocation erodes the contribution of the permanent clustering to innovation in manufacturing industries? A research note

52nd Congress of the European Regional Science Association: "Regions in Motion - Breaking the Path", 21-25 August 2012, Bratislava, Slovakia

Provided in Cooperation with:

European Regional Science Association (ERSA)

Suggested Citation: Belso-Martinez, Jose (2012) : To what extent temporary collocation erodes the contribution of the permanent clustering to innovation in manufacturing industries? A research note, 52nd Congress of the European Regional Science Association: "Regions in Motion - Breaking the Path", 21-25 August 2012, Bratislava, Slovakia, European Regional Science Association (ERSA), Louvain-la-Neuve

This Version is available at:

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Abstract

This paper provides a nuance picture of the mechanisms through which temporary and permanent spatial co-location simultaneously sustain firm's innovation. Using a large sample of footwear clustered firms, results suggest that, on the one hand, intra-cluster Vertical relationships contribute to innovation through firm's internal resources. On the other hand, temporary collocation outside the cluster boundaries (in our case: Trade shows) enhances the mediating role of firm's internal resources. Further than supporting recent research on temporary proximity and trade shows, our findings contribute to fill the research gap with regard to the effects of combining both forms of spatial proximity.

Keywords: clusters, temporary proximity, trade shows, footwear, Spain

JEL code: L14, L29

1. Introduction

During decades, among economic geographers, the homogeneity and the benign effect of spatial clustering on innovation have been taken for granted. In this vein, intra-cluster cooperation fosters innovation performance by triggering collective learning processes (Asheim and Isaksen, 2002). But clustered firms may not engage and benefit from external resources to the same extent. Each firm's specific assets, particularly the absorptive capacity (Cohen and Levinthal, 1990), determine its ability to access, absorb, and employ knowledge residing outside firm's boundaries. Furthermore, firms presenting solid resources are more prone to establish valuable relationships with other units (Giuliani and Bell, 2005). The corollary is immediate, clustered firms may exhibit asymmetries of resources and linkages, capable of generating notable differences in terms of innovation performance. The stronger the firm's resources and absorptive capacity are; the higher probability to acquire and apply external knowledge and thus achieve an outstanding innovation outcome compared with the neighborhood.

Deeper analysis of these industrial systems highlights not only their growing heterogeneity, but also the increasing permeability of their boundaries. For example, positive and negative effects derived from co-location coexist in clusters. Access to non-local repositories of knowledge enables firms to circumvent undesirable phenomena, by providing new knowledge necessary for substantial innovations (Wolfe and Gertler, 2004; Bathelt et al., 2004). Institutions and leading firms may act as brokers between local firms and extra-cluster repositories of knowledge, capturing and elaborating fresh knowledge that is later diffused inside the industrial system. Also firms can develop their own extra-cluster relationships by establishing contacts with actors located outside the cluster boundaries through exhibitions or trade shows. Recent research has viewed these events as relational spaces in which countless actors interact and learn spontaneously (Rinallo and Golfetto, 2011). However,

these distanced mechanisms for transferring knowledge do not offer the same scope for reciprocity, trust, understanding and serendipity.

The 'relational turn' in economic geography opens for new understandings of how proximity still matters for knowledge exchange. Admitting the fuzzy nature of the concept (Markusen, 1996), proximity means "being close to something" either from a geographical (physical) and/or a relational dimension (Legendijk and Lorentzen, 2007). Both spatial co-location and social interactions facilitate knowledge transfers and have a positive impact on performance (Boschma, 2005). However continuous interactions thanks to geographical co-location are not always necessary for innovation, idea which has underpinned the widespread belief in the importance of spatial proximity (Rychen and Zimmermann, 2008). Nowadays, the need for spatial proximity can be circumscribed to certain stages of the process of production, research or development (Rallet, 2008). As recent research evidence, geographical proximity remains crucial for knowledge transfers, but it may not imply permanent co-location. Temporary proximity implies non-localized and sporadic interactions, capable of generating valuable knowledge transfers (even fine-grained) that ensure inflows of knowledge and consequently retaining the potential for innovation through recombination (Ramirez-Pasillas 2008; Torre, 2008). Even when colocation is of temporary nature, spatial proximity during events like exhibitions or trade show multiplies the occasions to meet and contact, using both formal and informal channels. Consequently, trade shows and exhibitions behave like these temporary clusters where knowledge transfers and diverse synergies emerge (Bathelt and Schuldt, 2008).

This distinction between permanent proximity and temporary proximity has challenged the territorialized innovation theories that highlight the functional role of local capabilities and benefits of spatial proximity between interacting parties. Consequently, an intense debate among researchers has recently emerged, as the relevance of these temporary forms of proximity is emphasized at the expense of the traditional contribution of permanent co-location. While non-local knowledge obtained through these temporary forms of proximity sustains the innovation trajectory; the importance of the industrial system is limited to the supply of labour and the support of local institutions (Lorentzen, 2007), relegating its role as source of knowledge and innovation. In other words, geographical proximity remains crucial for knowledge transfers, but short or medium term interactions can be enough to exchange the information needed for cooperation (Rallet, 2008).

This paper aims to contribute to this debate by further analysing the mechanisms through which both permanent and temporary proximity affect innovation performance. Being sensitive to recent considerations by Ramirez-Pasillas (2010), our research overcomes relevant limitations by simultaneously considering the interconnectivity of local networking activities and temporary geographical proximity. From our literature review (Ramirez-Pasillas, 2010; Rinallo and Golfetto, 2011), our expectation is that in firms with high levels temporary co-location (trade shows), intra-cluster relationships might be more likely to foster innovation through internal resources because transitory interactions exercise an amplifying effect due to additional opportunities for

valuable information sharing and synergies. In other words, *this research is expected to analyze and confirm whether internal resources mediate the effect of vertical relationships on innovation performance as a function of the underlying level of temporary proximity.*

In doing so, the paper not only takes into account the importance of firm's resources and interactions in the process of knowledge transfers and innovation (Autant-Bernard et al., 2007; McCann and Folta, 2011); at the same time, it recognizes that knowledge and innovation processes are extremely complex to assume that they can always be explained through monotonic relationships and direct effects. In this vein, by using a firm-level data from a footwear cluster and a moderated mediation model, we move beyond pre-published research that just focus on moderating effects or mediating effects, relegating the jointly analysis of both phenomena. As follows, we describe the study setting, discuss the main findings and present conclusions and implications.

2. The study setting

Data and sample issues

The Spanish footwear industry is characterized by the prevalence of SMEs geographically agglomerated, exhibiting high levels of specialization in concrete stages of the production process. The Vinalopo cluster appears as the largest agglomeration accounting for more than 60% of the national production, and has been identified as an industrial district (e.g. Giner and Santa María, 2002). This vertically disintegrated structure has exhibited collective efficiency and innovative dynamics. In this vein, the existence of a solid auxiliary industry, result of spin-off processes, has facilitated the implantation of sophisticated business models based on branding or design. Finally, universities, research centers or associations located inside the cluster boundaries have demonstrated a noteworthy ability to provide specialized services, promote an atmosphere of trust crucial to inter-firm cooperation and facilitate the access of local actors to extra-cluster repositories of knowledge.

Data for this research was collected in this cluster using a two stage methodology. Through the initial stage, 12 semi-structured questionnaires and face-to-face interviews were conducted to gather primary data about the industry in order to elaborate our questionnaire and enhance the discussion of the results. In the second stage, once we tested our tool on 35 firms and modified certain categories, we submitted the questionnaire to firms with more than one employee drawn from Dun&Bradstreet international database. A total number of 251 entrepreneurs and top level managers accepted to collaborate during 2006, allowing a significance level of 95.5% with an error margin of 5% for the worse case ($p=q=50$). The existence of non-respondent or early-late response bias was controlled, Mann Whitney's test did not identified remarkable difference across the respective sub-samples ($p\text{-value}<.1$). Additionally, we discarded common method bias using Harman's single factor test. Exploratory factor analysis revealed 3 factors with eigenvalues greater than one, and no single factor accounted more than 25% of the co-variation.

Classified according to size, 56.2% of the firms had less than 6 employees, 33.8% had between 6 and 24, and 10% had more than 24. The sample exhibits

low average values in terms of Product design intensity (Mean=5.87; Sd=5.86), and Marketing intensity (Mean=2.23; Sd=3.63);. Regarding product innovation, 48.1% of the firms ranged from medium to very low product innovativeness; while 46.6% of the firms were positioned in the medium to very low market segments. Finally, the average number of trade shows attended per year was 2.4 (Sd=2.42).

Variables

Innovation performance

Following Hervas-Oliver and Albors-Garrigos (2009), our dependent variable was built mixing data from two sources: a) manager's perception about firm's product innovation evaluated through a 5 point Likert scale; b) firm's market positioning evaluated through the final price of the product using a 5 point Likert scale. As our reliability analysis revealed a satisfactory Cronbach's alpha of .70, we ran a factor analysis (KMO>.500; p-value<.01) to obtain one factor explaining 65.29% of the variance and loading equal .803.

Vertical relationships

This variable measures the influence of the permanent collocation. Respondents were asked to rate: a) the strategic relevance of the different linkages with clients and suppliers; b) the stability and intensity of the resources shared among each type of relationship. We applied a 5-point Likert scale where 1: was very low and 5: very high. Internal validity and consistency of the construct was checked. Results obtained achieved Cronbach's alpha over .85, validating the aggregation of the four items in one factor evidencing eigenvalue= 2.737 and 68.42% of total variance explained (KMO>.50; p-value>.01). Factors loadings ranged from .786 to .877.

Internal resources

In order to gather data about a firm's internal innovation activities, our survey requested information about product design and development innovation intensity and marketing innovation intensity. Considering Marsili and Salter (2006), the variable was operationalized as follows: % design-product development and marketing expenditures on total sales during the last three years.

Extra-cluster temporary proximity

Considering above mentioned literature (Torre, 2008; Ramírez-Pasillas, 2008), international exhibitions and trade shows represent contexts of temporary proximity as face-to-face interactions during the event multiplies the occasions of knowledge sharing through both formal and informal channels. Therefore, we selected the average number of international exhibitions and trade shows attended by the firm during the last three years as our proxy for temporary clusters. To avoid relying in just indicator, we combined data on trade shows with average export intensity during the last three years, assuming that higher export intensity implies more pro-active attitude in the attended events. Factor analysis provided us a unique factor evidencing eigenvalue= 1.27 and 63.467% of the variance explained (KMO>.500 and p-value<.01). Factor loadings accounted for .797.

Control variable

We opted for Size measured as the average number of employees during the last three years. Size can affect a unit's innovation, as large units have more resources and advantages in gaining support for its innovation activities.

To further verify the robustness of our variables, confirmatory analysis was conducted also using qualitative techniques. Peer debriefing (confirming analysis with a small group of academic experts and policy makers) and member checks (confirming analysis with the study's participants) also corroborated the validity of the construct. Main descriptive statistics and correlation matrix are shown in Table 1.

Statistical analysis and results

To overcome several statistical problems (e.g. non-normally distributed variables), bootstrapping non-parametric technique was applied to evaluate strength and significance of the indirect effect. Further than the mere analysis of whether Internal resources mediate the effect of Vertical relationships on Innovation performance, we propose a moderated mediation model of Vertical relationships, Internal resources, Temporary proximity and Innovation performance. Moderated mediation occurs when a mediated relationship depends on the level of a moderating variable. In our model depicted in Figure 1, Internal resources mediate the association between Vertical relationships and Innovation performance, and the strength of this mediated relationship varies depending on Temporary proximity.

In order to test the above-presented effect, we applied method designed by Preacher et al. (2007) for probing the conditional indirect effect at the mean level of Temporary proximity and at one standard deviation above and below the mean in the moderator. Considering the purpose of our study, we first obtained the mediator variable model in which we regressed Internal resources on Vertical relationships and the interactions for the moderating effects (Vert*TemProx). As can be seen, the interaction term Vert*TemProx was significant at $p\text{-value} < .05$. Next, we calculated the dependent variable model, in which innovation performance was regressed on Vertical relationships, Internal resources, and the interactions for the moderating effects (Vert*TemProx and InRec*TemProx). As shown in Table 2, the interaction InRec*TemProx was significant at $p\text{-value} > .01$.

According to results displayed in Table 2, the indirect effect was significant at one standard deviation above the mean in Temporary proximity (bootstrap indirect effect=.8833; $p\text{-value} < .1$). Conversely, the indirect effect was not significant at the mean level of the moderator (bootstrap indirect effect=-.0330; $p\text{-value} > .1$) and at one standard deviation below the mean in Temporary proximity (bootstrap indirect effect=-.9492; $p\text{-value} > .1$). Among firms engaged in higher Temporary proximity, Vertical relationships are associated with better Innovation performance through higher Internal resources. In addition, there is not mediated relationship between Vertical relationships, Internal resources, and Innovation performance in lower and average Temporary proximity.

In a final procedure, the region of significance of the indirect effect was obtained using the values of the moderator for which the mediation effect was significance. Figure 2 shows the magnitude of the conditional indirect effect at different z.values of the moderator with a 90% confidence band. The two dotted lines represent the lower and upper boundaries of the region of significance.

3. Discussion and conclusion

Using firm-level data from the largest Spanish footwear cluster and a novel methodology, this paper provides valuable insights about the crucial role of geographical proximity, either temporary or permanent, for innovation. Our findings indicate that intra-cluster linkages foster innovation through internal resources. However, the appropriate functioning of this mediating mechanism depends on the moderating effect of the extra-cluster temporary proximity. Say it differently, just firms evidencing certain levels of both temporary and permanent proximity acquire and absorb the external resources that sustain innovation. Consequently, the fashionable hypothesis of the death of distance should be reconsidered, and the assertion about the irrelevance of geographical proximity for knowledge transfers and innovation should be carefully re-examined.

As recently Rallet (2008) indicated, the role of space have changed but it is not negligible. Although proximity has become more and more temporary and circumscribed to certain moments, face to face interactions still create opportunities for tacit knowledge transmission, and innovations. Additionally, the particular profile of both forms of proximity allows us to confirm the need for the “global” and the “local”. Firms need a minimum threshold of extra-cluster relationships in order to maximize the benefits of intra-cluster linkages absorbed thanks to their solid internal resources. The implication for practitioners and policy makers is immediate: certain amount of temporary proximity should be promoted as it provides opportunities for knowledge transfers (particularly fine grained) that complement local knowledge, generating valuable synergies.

However, what seems outstandingly interesting is that temporary proximity does not displace permanent proximity. Consistently with the nowadays business dynamics, temporary and permanent proximity should complement each other in order to optimize innovation activities. First, because traditional intra-cluster sources of knowledge, particularly customers and suppliers, are not longer strictly local. Second, because the increasing specialization of some agglomerations demands concise knowledge not provided by local institutions. Counterbalancing some previous research (Lagendijk and Lorentzen, 2007), in our opinion the benefits derived from territorialized partners and permanent proximity remain crucial, but should be combined with certain forms of temporary geographical proximity.

The form of temporary proximity selected allows some interesting final considerations. On the one hand, trade shows should not be only viewed as opportunities for developing commercial and internationalization aspects, but also as powerful tools to acquire valuable knowledge or enhance inter-organizational social capital that fosters firm’s innovation performance. The multi-level exchanges of knowledge in these temporary forms of proximity –from

the merely local to the truly global- activate diverse synergies that stimulate innovation (Rinallo and Golfetto, 2011). Therefore, organizers should design initiatives to further expand this inter-acting facet between highly internationalized and specialized groups. On the other hand, trade shows amplify the positive effect of permanent proximity because attending firms may observe latest tendencies and novel technologies or engage in collective promotion of their activities (Ramirez-Pasillas, 2010). From the systemic perspective, firms may help other local units to surpass well-known detrimental effects derived from permanent geographical proximity by disseminating inside the cluster boundaries.

Finally, due the particular operativization of the variables or the cross-sectional and specific nature of the sample, cautious is needed when interpreting these results (particularly in terms of generalizability). Future research should try to overcome these limitations by evaluating other forms of temporal proximity as well as multi-sectorial and longitudinal data.

References

Asheim, B. and Isaksen, A. (2002) Regional Innovation Systems: The Integration of Local 'Sticky' and Global 'Ubiquitous' Knowledge, *Journal of Technology Transfer*, **27**, 77–86.

Autant-Bernard, C., Mairesse, J. and Massard, N. (2007) Spatial knowledge diffusion through collaborative networks, *Papers in Regional Science*, **86**, 495-519.

Bathlet, H., Malmberg, A. and Maskell, P. (2004) Clusters and knowledge: Local buzz, global pipelines and the process of knowledge creation, *Progress in Human Geography*, **28**, 31–56

Bathelt, H. and Schuldt, N. (2008) Between luminaires and meat grinders: International trade Fairs as temporary Clusters, *Regional Studies*, **42**, 853-868.

Boschma, R. (2005) Proximity and innovation: A critical assessment, *Regional Studies*, **1**, 61-74.

Camagni, R. (1991) Local "Milieu", Uncertainty and Innovation Networks: Towards a New Dynamic Theory of Economic Space. In Camagni, R. (ed.) *Innovation Networks: Spatial Perspectives*, 121–142. London: Belhaven Stress.

Cohen, W. and Levinthal, D. (1990) Absorptive Capacity: A New Perspective on Learning and Innovation, *Administrative Science Quarterly*, **35**, 128–152.

Giner, J. and Santa María, M. (2002) Territorial systems of small firms in Spain: an analysis of productive and organizational characteristics in industrial districts, *Entrepreneurship and Regional Development*, **14**, 211-228.

Giuliani, E. and Bell, M. (2005) The micro-determinants of meso-level learning and innovation. Evidence from a Chilean wine cluster, *Research Policy*, **34**, 47–68.

Hervas-Oliver, J. and Albors-Garrigos, J. (2009) The role of the firm's internal and relational capabilities in clusters: when distance and embeddedness are not enough to explain innovation, *Journal of Economic Geography*, **9**, 263-283.

Legendijk, A. and Lorentzen, A. (2007) Proximity, Knowledge and Innovation in Peripheral Regions. On the Intersection between Geographical and Organizational Proximity, *European Planning Studies*, **4**, 457-466.

Lorentzen, A. (2007) The geography of knowledge sourcing – A case study of polish manufacturing enterprises, *European Planning Studies*, **15**, 467-486.

Markusen A. (1996) Sticky places in slippery space: a typology of industrial districts, *Economic Geography*, **72**, 293-313.

McCann, B. and Folta, T. (2011) Performance differentials within geographic clusters, *Journal of Business Venturing*, **26**, 104–123.

Preacher, K., Rucker, D. and Hayes, A. (2007) Addressing moderated mediation hypotheses: Theory, methods, and prescriptions, *Multivariate Behavioral Research*, **42**, 185-227.

Ramirez-Pasillas, M. (2010) International trade fairs as amplifiers of permanent and temporary proximities in clusters, *Entrepreneurship and Regional Development*, **22**, 155-187

Ramirez-Pasillas, M. (2008) Resituating proximity and knowledge cross-fertilization in clusters by means of International trade fairs, *European Planning Studies*, **16**, 643-663.

Rinallo, D. and Golfetto, F. (2011) Exploring the knowledge strategies of temporary cluster organizers: A longitudinal study of the EU fabric industry trade shows (1986-2006), *Economic Geography*, **87**, 453-476

Rychen, F. and Zimmermann, J. (2008) Clusters in the global knowledge based economy: Knowledge gatekeepers and temporary proximity, *Regional Studies*, **42**, 767-776

Torre, A. (2008) On the role played by temporary geographical proximity in knowledge transmission, *Regional Studies*, **42**, 869–889.

Wolfe, D. and Gertler M. (2004) Clusters from the inside and out: local dynamics and global linkages, *Urban Studies*, **41**, 1071–1093.

Table 1. Correlations and main descriptive statistics

<i>Innovation performance</i>	1				
<i>Size</i>	***.226	1			
<i>Internal resources</i>	** .117	.056	1		
<i>Vertical relationships</i>	.083	-.010	*.092	1	
<i>Temporary proximity</i>	.096	***.349	** .201	***.150	1
<i>Mean</i>	.000	11.69	4.079	.000	.000
<i>Standard deviation</i>	1.000	17.91	3.499	1.000	1.000

Significance level ***.01; **.05; *.1

Table 2. Moderated mediation model results

	MEDIATOR VARIABLE MODEL	DEPENDENT VARIABLE MODEL
<i>Constant</i>	***3.9924	**-.2084
<i>Size</i>	***-.8967	** .3146
<i>Vertical Relationships</i>	.1655	.0501
<i>Temporary proximity</i>	.3099	-.1164
<i>Vert*TemProx</i>	** .7012	-.1442
<i>Internal Resources</i>		***.0482
<i>IntRec* TemProx</i>		***.0520
Conditional indirect effect at specific value(s) of the moderator(s)		
Mean -1SD	-.9492	
Mean	-.0330	
Mean +1SD	*.8833	

Significance level ***.01; **.05; *.1

Figure 1. Compacted presentation of the conditional indirect model

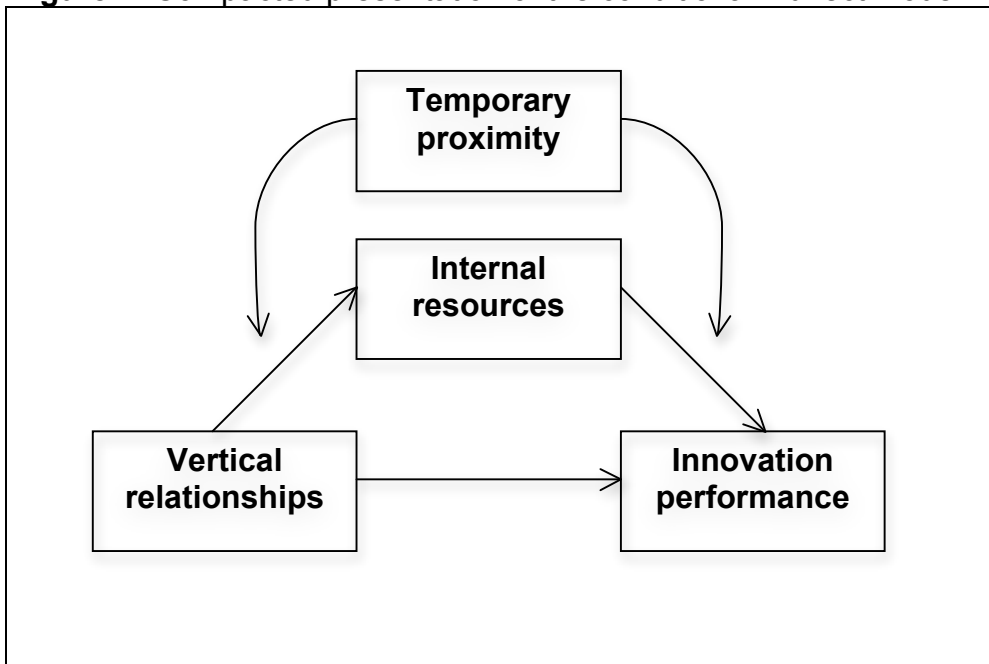


Figure 2. Region of significance at different levels of the moderator

