Cluster Internationalization

An analysis of the cluster internationalization and its impact on firm´s innovativeness

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Extended Abstract

The last decade has witnessed the popularization of two seemingly competing trends: globalization and localization (De Martino et al., 2006). The localization trend mainly deals with clusters, which are defined by Michael Porter as "(…) a geographic concentration of interconnected companies, specialized suppliers, service providers, associated institutions and firms in related industries." (Porter, 1998, p. 77). Modern economies without clusters seem to be an oxymoron in the 21st century. According to the European Cluster Observatory, just within the European Union (EU) there are 2000 statistically relevant clusters that employ nearly 40% of the European workforce (Brown et al., 2007; Festing et al., 2012). In light of the success of some clusters, as for example Silicon Valley, the concept has become quite popular among politicians who are motivated to foster cluster initiatives in order to write a similar success story for their region (Festing et al., 2012). On the other hand, the globalization has been continuously progressing and has significantly influenced today´s society. Major features of the globalization refer to the development of global finance and financial markets, the improved communication infrastructure facilitating knowledge exchange as well as the widespread availability and use of technology (Enright, 2000).

Clusters, however, cannot be viewed in isolation from this tremendous geographic-based trend (De Martino et al., 2006). While the notion of some researchers referring to the "death of distance" (Cairncross, 2001) and the reduced importance of location seem to be exaggerated, it can be at least stated that the globalization trend implies new challenges for regional clusters (De Martino et al., 2006; Enright, 2000).

In this context, especially the internationalization process has to be highlighted. Entire value chains located in one specific region have been sliced up and are located in different regions all over the world, as local knowledge is not always sufficient to stay competitive (Mudambi and Puck, 2016; OECD, 2007). There has been a growing amount of literature dealing with

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the impact of this phenomenon on the performance of clusters (De Martino et al., 2006; Karlsen and Nordhus, 2011). The EU studies by Meier zu Köcker et al. (2007 and 2010), for example, come to the conclusion that clusters are not capable of long-term success and development unless their members are acting in global markets and are engaged in international knowledge transfer. As companies and other actors internationalize their activities, it is, however, also reasonable to assume that cluster initiatives, supporting them, internationalize, too (Islankina, 2015).

While in the previous research only the impact of firm internationalization on regional clusters has been examined (De Martino et al., 2006), the effect of cluster internationalization has been widely ignored. It is therefore still unclear what consequences the internationalization of a cluster entails for the innovativeness of the companies within the corresponding cluster. Thus the following research question arises:

- To what extent does the internationalization of a cluster influence the innovativeness of the member companies?

In order to answer this research question, a quantitative survey of the member organizations of eleven different clusters in Germany, which are at the beginning of their internationalization process, is conducted. Additionally, a qualitative interview with the corresponding cluster managers is executed, to determine the degree of internationalization of the clusters.

At least since the famous scientific work of Cohen and Levinthal (1990) it is known that external knowledge is often critical to the innovation process. Innovation is the result of a combination of internal as well as external knowledge (Hervas-Oliver and Sempere-Ripoll, 2014). Bathelt et al. (2004) introduced, in this context, the concept and terminology of local buzz and global pipelines. Local buzz refers to the transfer of knowledge created by face-to-face contacts, co-presence and co-location of firms within the same industry and place or region. In other words, local buzz can also be described as neighborhood effects. It is argued that the participation in the knowledge exchange does not require any kind of particular investments. However, this does not imply that the quality of the buzz is always the same. Depending on the social linkages it ranges from low-quality to high-quality local buzz. Contrary, global pipelines refer to extra-cluster relationships. For the successful establishment of such a relationship it is required to invest time as well as (financial) resources (Bathelt et al., 2004).

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Nevertheless, having access to local and external knowledge sources does not lead automatically to an increased innovative performance. Instead companies need to have, what Cohen and Levinthal (1990) called, absorptive capacity. This capacity not only describes a company´s ability to scan and evaluate information from its environment, but also refers to the ability to integrate the new external knowledge into a company´s internal knowledge stock. The absorptive capacity is therefore essential to actually assess all kind of information. Without it companies would not be able to profit from local knowledge spillovers nor from external knowledge flows (Cohen and Levinthal, 1990; Hervas-Oliver and Sempere-Ripoll, 2014).

The relationship and structure of local buzz and global pipelines of a cluster of interrelated actors and firms is depicted in the following figure, created by Bathelt et al. (2004).
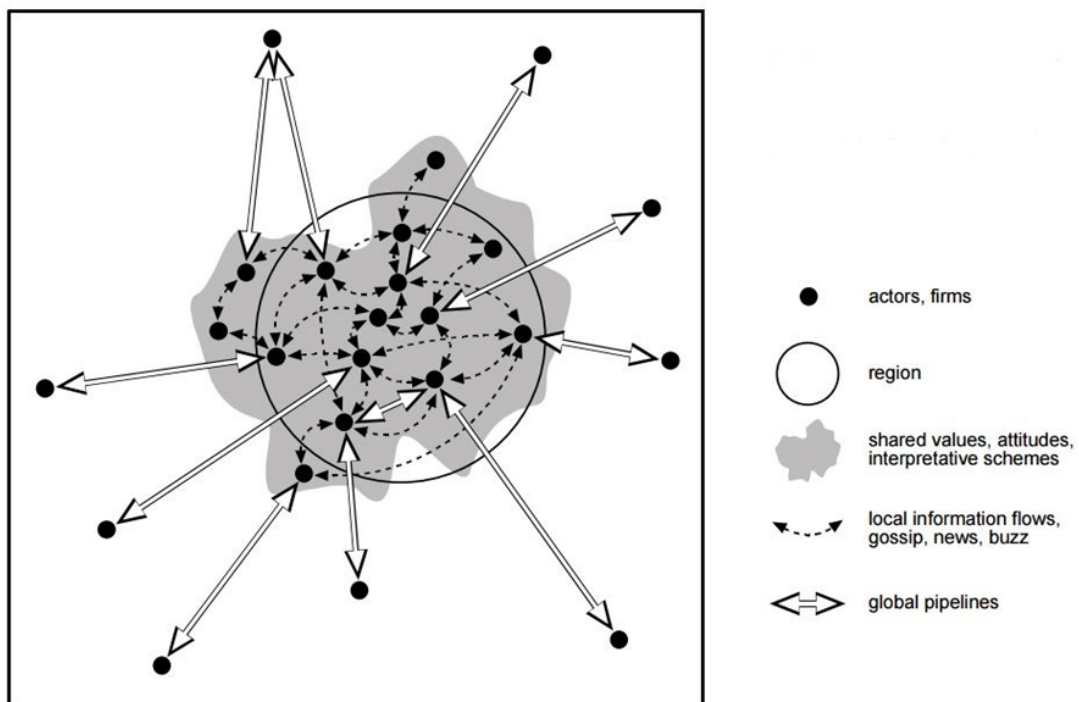

Figure 1: The relationship and structure of local buzz and global pipelines (Source: Bathelt et al., 2004)

First of all, it shows the local information flows between all actors within this cluster, defined as local buzz. Additionally, it also illustrates that a cluster cannot be restricted to any regional scale, as due to ongoing interactions between different actors over time and the resulting values, actors located outside the actual region may also be included. Furthermore, the global pipelines of different kind of actors are demonstrated. Regarding the buzz and pipelines relationship it can be stated that they are mutually reinforcing. Meaning that the more firms exist within the corresponding cluster, the more firms are actually engaged in the buildup of translocal pipelines. The more pipelines, the higher is the quality and quantity of the buzz (Bathelt et al., 2004).

![CRIE logo]

While this model primarily focuses on the actors/firm level, it can also serve as the basis for a conceptualization of the effect of cluster internationalization on firm´s innovativeness. This conceptual extension is depicted in the following figure.
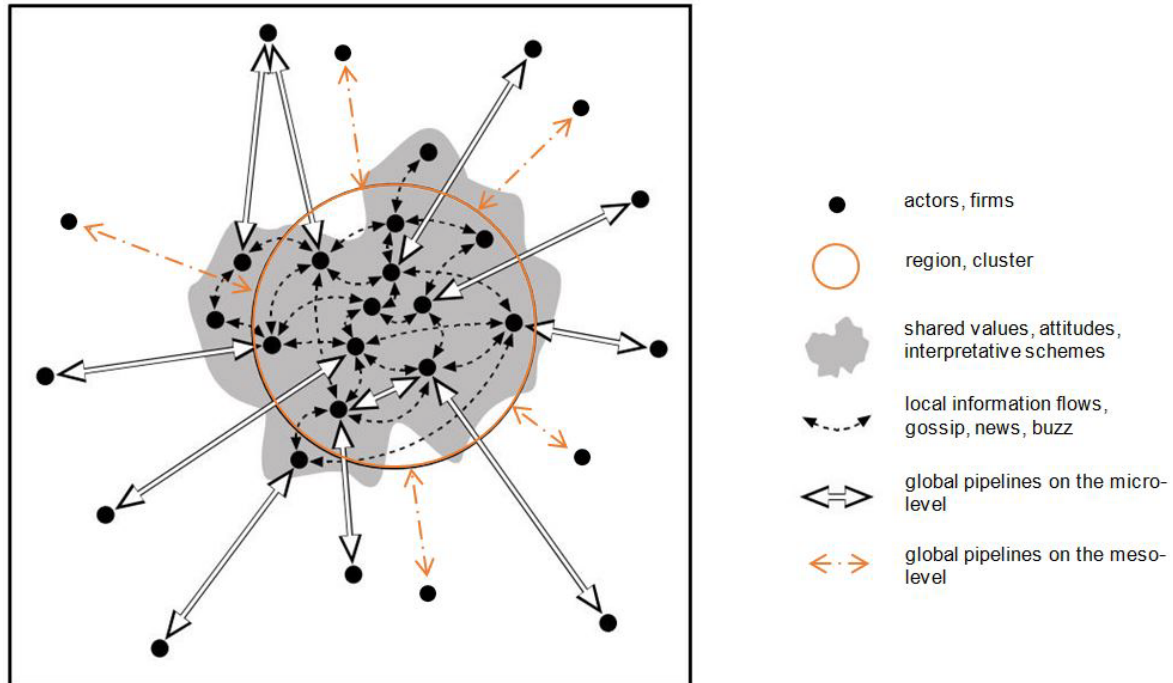

Figure 2: Conceptualization of the cluster internationalization (Building on Bathelt et al., 2004)

It is assumed that a cluster itself can also build up external knowledge linkages by going international. Hence, not only firms can establish global pipelines, but also the cluster in itself. As a consequence, it is differentiated between global pipelines on the micro-level and global pipelines on the meso-level. By establishing global pipelines on the meso-level, the cluster brings in additional knowledge and therefore contributes to the quality as well as quantity of the local buzz. Consequently, in the end firm´s innovative performance is supposed to be positively affected.

Coming to the empirical approach one can state that the applied dataset is primarily based on a quantitative survey. This survey is being conducted within the academic research project "*InterSpiN – Internationalisierung von Spitzenclustern, Zukunftsprojekten und vergleichbaren Netzwerken*" (Internationalization of clusters and networks). During the survey the member organizations, including firms as well as research institutions, of eleven different clusters/networks located in Germany were asked to participate. However for the purpose of this study only the answers of companies are considered. The total sample size, excluding explicitly research institutions, therefore contains 254 respondents.

The innovative performance of the firms within the corresponding cluster is captured through three different variables. First, the number of employees in the R&D department is considered. Second, the development of the R&D expenditures as share of the total turnover is also used as a proxy. Finally, the survey also includes direct questions regarding the radical and incremental innovations. For future analysis it is also possible to make use of patent data, as the survey contains the full organization name and the corresponding address.

The measurement of the degree of internationalization of a cluster is based on a qualitative survey which is also being conducted within the academic research project "InterSpiN". In this survey the responsible cluster managers were asked to participate. Indicators for the degree of internationalization refer, for example, to the available financial and human resources.

The then derived empirical as well as theoretical results do not only contribute to closing a still ubiquitous research gap, but also have a practical meaning especially for regional policy makers.

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