Patterns for Cluster Emergence in Latecomer Economies

Giedrius Jucevicius\textsuperscript{a}, Kristina Grumadaite\textsuperscript{b,}\textsuperscript{*}

\textsuperscript{a, b} Kaunas University of Technology, Donelaicio str. 73, Kaunas LT-44239, Lithuania

Abstract

This article presents various patterns for cluster emergence in latecomer countries based on the literature of cluster typologies and cluster emergence case studies. Defining clusters as complex adaptive systems, the main emphasis is placed on the dimension of relations, thus the patterns for cluster emergence are formulated as solutions to overcome the scarcity of cooperation in latecomer countries. The following patterns of cluster emergence are critically discussed in the light of latecomer economy: 1) Large firm(s) acting as anchors for attracting smaller companies into cluster; 2) Cluster emergence as a means to serve the needs of large customer outside the cluster; 3) Cluster emergence via professional associations; 4) Cluster emergence via local business entrepreneurs; 5) Cluster emergence via local institutional entrepreneurs.

Keywords: Cluster emergence patterns; Cluster types; Latecomer economies; Emergence barriers; Internationalization.

Introduction

Numerous studies show that various self-organisation based industrial systems, including firm clusters, have a positive influence on individual firms, regions and countries in their adaptation to the complexity of environment in flexible and timely manner. Being a part of cluster helps firms increase competitiveness through enhanced specialization and reduced transaction costs, collective learning and knowledge sharing and thus create the well-being for regions and countries (Eisingerich, Bell & Tracey, 2010). Nevertheless, the emergence of self-organizing industrial systems faces many challenges in so-called “latecomer” countries (Storper, 1998), especially in the post-Soviet states. According to Storper (1998), latecomer countries hold the position between developed and developing countries and are characterized by basic human and physical infrastructure but are lacking skills of productive
Thus, the creation and implementation of adequate strategies that enable the emergence of vital self-organizing industrial systems is particularly relevant to the societies and economics of these countries.

However, the analysis of scientific articles reveals that there is still much to be done regarding research of cluster emergence. Scientists, such as Crespo (2011); Ramos, Roseira, Brito, Henneberg & Naude (2013); Martin & Coenen (2014), acknowledge that scientific literature deals more often with static aspects of clusters or emphasizes the top-down formation of these structures that is proved as not very effective (Lockett, Jack & Larty, 2012; Kowalski & Marcinkowski, 2014). Clusters in their nature are complex adaptive systems (Lindsay, 2005; He, Rayman-Bacchus, & Wu, 2011), and such systems possess the qualities of self-organisation and bottom-up emergence. The aim of this article is to present various patterns of cluster emergence and their potential applications in the context of latecomer (e.g. post-Soviet) economies with low level of inter-actor trust and underdeveloped modes of governance.

In the first part of this article, the variety of cluster types is presented and analysed. In the second part, some cluster emergence patterns as well as their implications for the latecomer economies are revealed.

1. The variety of cluster types

First of all, one should mention that the concept of cluster is as wide as it is fuzzy. The most popular definition of clusters belongs to Porter (2000), who defines clusters as “geographically proximate groups of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities”. However, many related concepts, such as industrial districts, industrial agglomerations or innovative milieus are still being used in scientific research. Industrial systems typologies that are applied while analyzing cluster phenomenon, also reveal the complexity of views toward clusters. For example, Iammarino & McCann (2006), through the lenses of transaction cost theory, present pure agglomeration, industrial complex and social network as ideal types of clusters. Brenner (2000) discusses technological district, craft-based district, knowledge-based milieu, industrial cluster, investment cluster and public-based milieu as local system types. It should be noted that one of the most cited typologies in cluster research belongs to Markusen (1996). She defined Marshallian industrial district, Italianate variant of the latter type, hub-and-spoke district, satellite industrial platforms and state anchored industrial districts. The influence of this typology is evident in the more recent cluster classifications created by Paniccia (2005) or especially Pickernell, Rowe, Christie & Brooksbank (2007). Alongside the hub and spoke, Italianate district, Marshallian type and satellite industrial platform, the latter authors present the types of industrial complex, urban hierarchy, social network and virtual organisation.

Cluster types can be also defined according to mechanisms applied for their emergence: clusters vary depending on formal vs. informal intervention of national and local actors, applying explicit or implicit, bottom-up or top-down ways for cluster emergence (Fromhold-Eisebith & Eisebith, 2005). Following Crespo (2011), cluster types differ because of deterministic, mimetic, directed network effect or non-directed network effect that was dominant in cluster emergence.

In this article, we are looking at the clusters as complex adaptive systems (CAS). Having in mind that CAS are networks of interacting actors that are alike in nerve systems (Uhl-Bien, Marion & McKelvey, 2007), we concentrate only on the types of clusters that can be based on social networks. Also, we exclude cluster types that are related to top-down interventions such as state anchored clusters from Markusen (1996) typology because CAS and their processes emerge from the interactions among lower level actors without a central control (Anderson, 1999). However, following the statement of Halley and Winkler (2008) that the non-equilibrium of systems demonstrates a particular intervention from outside, we see public institutions as an important factor for the bottom-up emergence of industrial systems, especially in the context of latecomers. Later in this article, we present various patterns of cluster emergence, by trying to find the means to solve the barriers of cluster emergence in latecomer countries.

2. The barriers for cluster emergence in latecomer economies and possible solutions

Successful emergence of clusters depends on various factors. For example, Brenner & Mühlig (2013) analysed 159 cases and highlighted numerous prerequisites for cluster emergence, such as a skilled labour force, universities and public research, social networks, industrial structure, local demand, local capital market, local politics that
Cluster emergence via local business entrepreneurs

Thus, the following patterns for cluster emergence tend to prevail:

- **A large company or some large companies acting as anchors for attracting smaller companies and thus creating a “hub and spoke” structure for a cluster** (Markusen, 1996; Pickernell et al., 2007; Elola, Valdaliso, Lópex & Aranguren, 2012; Ramos et al., 2013; Gallièa, Glaserb, Méridolola & Weil, 2013) faces problems because national companies aren’t attractive as flagships due the lack of assets (Gupta & Subramanian, 2008) and/or because of disregard of interests of small companies (Rosenfeld, 2003). In this case, scientific literature emphasizes the importance of attracting multinational companies in the region (Elola et al., 2012; O’gorman & Kautonen, 2004; Arbuthnott & von Friedrichs, 2013). It’s evident that government should play its role by creating opportunities for multinational companies to come (for example, see O’gorman & Kautonen, 2004).

- **Serving large companies outside the cluster by acquiring a structure of a satellite industrial platform** (see Markusen 1996; Pickernell et al., 2007). Taking into account that national companies in latecomer countries aren’t strong enough to create various new firms depending on their parent company and the emergence of new firms by an external multinational company sometimes may cause negative reactions, creating international customer network (Arbuthnott & von Friedrichs, 2013) or at least finding large multinational companies as customers may act to small and medium-sized companies as a leverage point to cooperate. One should mention that governmental institutions must create an attractive law system such a phenomenon to happen.

- **Industry / business / trade associations can work as catalysers for cooperation**, especially in the case of the clusters of small and medium-sized companies (Markusen, 1996; Pickernell et al., 2007; Brenner, 2000; O’gorman & Kautonen, 2004; Shin & Hassink, 2011; Giblin & Ryan, 2012; Arbuthnott & von Friedrichs, 2013). However, on the one hand, small and medium-sized companies possess poor capabilities for self-organisation and self-regulation (Johannisson et al., 2007), on the other hand, trade / business associations aren’t strong in latecomer countries (Pietrobelli & Barerra, 2002; Pickernell et al., 2007). In this situation, governmental institutions can participate in non-obligatory self-regulation schemes by giving all the necessary resources and this influencing cooperation in implicit ways (for example, see Ahedo, 2004; Saurwein, 2011).

- **Cluster emergence via local business entrepreneurs** (da Rocha, Kury & Monteiro, 2009; Arbuthnott & von Friedrichs, 2013; Brenner & Mühlig, 2013; Kowalski & Marcinkowski, 2014). In the case of latecomer countries, there is a lack of entrepreneurial activities and cooperation of entrepreneurs because of harsh competition due to small markets, big amounts of competitors and a lack of trust (for example, see Pietrobelli & Barrera, 2002; Kowalski & Marcinkowski, 2014; Stalgiené, 2010). The scarcity of entrepreneurial activities can be solved via attracting transnational entrepreneurs to a particular region (Henn, 2013). One of the types of transnational entrepreneurs are so called “new Argonauts” (Saxenian, 2006) or native employees coming back home with an international education and experience (Ibata-Arens, 2008; Henn, 2013). The government’s aim in this case should be the creation of attractive opportunities for these entrepreneurs to come. Also, scientists reveal the importance of even a small firm acting as a flagship to others (Gancarczyk, 2014) or searching for ways to enter global networks (Pickernell et al., 2007).
• **Cluster emergence via institutional entrepreneurs** (Ritvala & Kleymann, 2012). The latter authors analyze the cases of clusters whose catalysts were scientists, who emphasized the problems to be solved and united various representatives from public and business sectors, and society. However, sometimes latecomer countries face a problem of science and business cooperation. In such a case, presenting significant results to the society and highlighting the need for the further research may encourage the cooperation among business companies and other institutions.

The main statements are shortly presented in the table (see Table 1).

<table>
<thead>
<tr>
<th>A pattern</th>
<th>Barriers in latecomer economies</th>
<th>Possible solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>A large company or companies are acting as anchors for attracting smaller companies to a cluster</td>
<td>National companies aren’t able to play a role of flagships</td>
<td>Attracting multinational companies</td>
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<tr>
<td>Cluster emergence as a means to serve the needs of large customers outside the cluster</td>
<td>A lack of large companies</td>
<td>Creating networks with international customers</td>
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<td></td>
<td>The inability of large companies to create subsidiaries</td>
<td>Finding at least one large multinational company as a permanent customer</td>
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<tr>
<td>Cluster emergence via industry / business / trade associations</td>
<td>Self-regulation associations are lacking vitality</td>
<td>Government co-participation in self-regulation schemes</td>
</tr>
<tr>
<td>Cluster emergence via local business entrepreneurs</td>
<td>A lack of entrepreneurial activity and entrepreneurial cooperation due the lack of trust and a harsh competition</td>
<td>Attracting the “new Argonauts” and other transnational entrepreneurs to a particular region</td>
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<td></td>
<td>The importance of a small firm that can act as an anchor for clustering</td>
<td>The importance of a small firm that can act as an anchor for clustering</td>
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<td>Entering global networks</td>
<td>Entering global networks</td>
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<tr>
<td>Cluster emergence via local institutional entrepreneurs</td>
<td>A scarce cooperation among business and science representatives</td>
<td>An active and attractive presentation of research significance to society and business companies</td>
</tr>
</tbody>
</table>

It’s evident from this table that latecomer countries can increase cluster emergence processes through internationalization – attracting and nurturing individuals and companies from abroad. In this article, we agree Arbuthnott & von Friedrichs (2013) stating that peripheries can be developed through advancing local networks, improving internationalization and enhancing local infrastructures, including a facilitative local government and community mobilization. It’s also very important to highlight that the success of actions depends on their ability to create a disequilibrium state that leads to changes (Palmberg, 2009; Uhl-Bien et al., 2007).

**Conclusions**

Clusters that are usually understood as the concentration of interconnected firms and related institutions in a particular location gain various forms depending on intentions of clustering firms to cooperate and reasons to emerge. From the viewpoint of complexity theory, clusters can be analyzed as complex adaptive systems, possessing the abilities of self-organisation and bottom-up emergence via the cooperation of their members.

Since the latecomer countries are characterised by a lack of productive cooperation, this article provides some patterns for cluster emergence as solutions to overcome the existing barriers. These patterns highlight the importance of local business, science, public and society representatives as co-workers for cluster emergence but
first of all, the significance of internationalisation by attracting multinational companies and transnational entrepreneurs, and entering global networks with international customers and international clusters.

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References


