Postprint of: Rozkwitalska M., Lis A., Social learning in cluster initiatives, Competitiveness Review (2020), DOI: 10.1108/CR-10-2019-0099

© 2020 Emerald Publishing Limited. This AAM is provided for your own personal use only. It may not be used for resale, reprinting, systematic distribution, emailing, or for any other commercial purpose without the permission of the publisher.

Social learning in cluster initiatives

Abstract:

Purpose – The purpose of the paper is to portray social learning in cluster initiatives (CIs), namely: 1) to explore, with the lens of the communities of practice (CoPs) theory, in what ways social learning occurs in CIs; 2) to discover how various CoPs emerge and evolve in CIs to facilitate a collective journey in their learning process. Subsequently, the authors address the research questions: In what ways does social learning occur in CIs? How is social learning facilitated through the emergence and evolution of various CoPs in CIs?

Design/methodology/approach – The study applies the abduction approach for the interpretation of the collected data and attempts to create the best explanations for the observations on the basis of the CoP theory. The qualitative study of four CIs helped to identify various ways that social learning occurs in CIs and the role of the identified CoPs in the process. Social learning is portrayed as a collective journey within and between CoPs, where the interactions of their members deepen their level of involvement and help them to enhance learning in their CoP.

Findings – The paper shows ways that social learning occurs in CIs and describes the role of CoPs. It identifies three types of CoPs in CIs: participants, cooperators and locomotives. Additionally, it documents different ways of social learning in CIs, namely one-way or two-way information transfer and raising awareness, demonstrating and inspiring, or motivating and educating. It also shows that while potentially every member of a CI has access to these practices, only a limited number of members are actually involved. Social learning in CIs is selective and some CI members accept their role as more peripheral in their CI.

Research limitations/implications – The research shows the application of the CoP theory to the analysis of social learning in CIs, a peculiar type of clusters. It describes how CoPs in the studied CIs varied in terms of the occurrence of learning. Furthermore, it reveals how social learning related to the level of involvement of CI members, namely with an increase of involvement, the members formed more selective CoPs and strengthened their social learning. Nevertheless, the qualitative approach in the study and the specific sample of the CIs chosen for the analysis do not allow a generalization of the findings.

Practical implications – Although in different CoPs social learning occurs in different ways, at each stage of the development of CIs the learning process is carried out on the basis of interactions created among members. Therefore, it is important to support the ‘soft’ forms of cooperation within CIs – involving members in activities and developing interactions. In addition, to ensure the growth of their entire CI, coordinators should create conditions for the development of existing CoPs into higher forms which better support learning. They should also adopt boundary spanning roles between various CoPs to strengthen social learning in CIs.

Competitiveness Review

Originality/value – The literature on CIs, which are peculiar forms of clusters, is still underdeveloped. The research fills in the gap concerning the ways social learning occurs in CIs. It shows that selectiveness can be observed in this process, and emphasizes the role of interactions developed through CoPs and the benefits offered by them. The study applies the CoP approach. Consequently, it expands the theoretical base in view of the generally lacking studies on social learning in CIs in the literature on clustering. Since the CoP theory has rarely been applied in the management literature, it also augments this specific field.

Keywords:

Cluster, Cluster initiatives, Collective identity, Communities of practice, Social learning

Competitiveness Review

Social learning in cluster initiatives

1 INTRODUCTION

The abundant literature on clusters perceives learning and knowledge flows as inevitable elements of their functioning, sources of increasing returns for enterprises in clusters, which are "magnified by the potential of interaction and networking effects" (Brosnan, Doyle & Connor, 2016, p. 508), and antecedents of innovation and competitiveness (Beerepoot, 2005, 2008; Capello, 1999; Cotic-Svetina, Jaklic & Prodan, 2008; Gausdal, 2008; Lin, Chuang & Wei, 2014; Lorenzen, 2018; Parrilli, Aranguren & Larrea, 2010; Perez-Aleman, 2011; Svetina & Jaklic, 2008). Learning is a driver through the lifecycle of a cluster, enhancing the development of the cluster firms as opposed to the non-cluster ones (Menzel & Fornahl, 2010). Such learning is collective or social as it occurs at the level of the cluster and involves interactions that create a context within which knowledge is formed and flows among cluster members. Knowledge, the result of the learning process, is more than mere data and facts that individuals acquire. It is enacted, situated and known by engaging in practices (Perez-Aleman, 2011).

Notwithstanding the vital role of learning and knowledge flows in the extant literature on clusters, a limited number of studies have documented social learning in clusters or cluster initiatives (CIs) due to the interactions that their members are involved in. Nevertheless, a deeper look at the nature of learning in CIs is necessary to understand how learning can contribute to their development, especially that geographical proximity may not be a sufficient factor for learning to occur (Staber, 2009; Ter Wal, 2013). Learning in clusters is predominantly via informal processes, namely during social interactions and experience gained as a result of participating in the practices of clusters (Beerepoot, 2005). The major channels of learning in clusters, identified in previous research, are through interactions with local firms and institutions as well as the local labor market (Svetina & Jaklic, 2008). Moreover, along with increasing globalization, the importance of cooperation for the competitiveness of firms is growing as codified knowledge is globally accessible. Consequently, the role of tacit knowledge acquired via an informal learning process is becoming more crucial (Gausdal, 2008).

Although the understanding of collective learning in the clustering literature is indeed social learning, social theories of learning, in particular the communities of practice (CoPs) theory (Wenger, 2009), have rarely been used to discover how learning occurs in clusters or CIs. While the CoP theory has become popular in other fields, it has only been addressed marginally in the management literature, remaining nearly absent in the studies on clustering (Wang & Helms, 2019). However, the concept of a CoP "fits well in the learning process contextualized in industrial clusters" (Wang & Helms, 2019, p. 5) since a CoP is a social entity composed of members that augment common knowledge through their participation in practices. Hence, the application of the CoP theory may help to shed new light on the process of learning in CIs and extend the extant subject knowledge.

Competitiveness Review

Therefore, the purpose of the paper is to portray social learning in CIs, namely: 1) to explore, with the lens of the CoP theory, in what ways social learning occurs in CIs; 2) to discover how various CoPs emerge and evolve in CIs to facilitate the collective learning journey. Subsequently, the authors address the research questions: In what ways does social learning occur in CIs? How is social learning facilitated through the emergence and evolution of various CoPs in CIs? In our study, we explore social learning in CIs as well as demonstrate different patterns of learning among CI members. We purposefully make a distinction between clusters and CIs and limit our investigation on social learning to CIs as a peculiar type of clusters.

Cluster initiatives[1] have gained importance in Europe since 1990. The literature on CIs has also developed extensively, yet it mainly derives from the overall studies on clusters (for its overview, see, e.g. Morgulis-Yakushev and Sölvell, 2017), which can be seen as a drawback since there are some differences between clusters and CIs, which concern the following (Sölvell, Lindqvist & Ketels, 2003): 1) CIs have their own life cycles which may not be fully aligned with the cluster life cycle; 2) the nature of clusters may shape the objectives and processes of CIs; 3) CIs are constituted to strengthen and develop clusters; 4) CIs are organizations (sometimes called cluster organizations - see, e.g. Jankowska and Główka, 2016; Morgulis-Yakushev and Sölvell, 2017) at a higher level of aggregation, built of other organizations that form a cluster; 5) CIs are interventions established to increase the competitive strength of the cluster through facilitating interactions, among others (Sölvell et al., 2003), and they should effectively promote spontaneous, face-to-face, informal interactions which are necessary to support knowledge flows among CI members and, consequently, their social learning; 6) companies located in spontaneous clusters and CIs differ with respect to "entrepreneurship level, linkages, social capital and financial dependence" (Ibn-e-Hassan & Talib, 2015, p. 526). Consequently, CIs are formally established organizations comprising institutional members that have joined them purposefully to achieve some collective or individual objectives (Lis, 2018). As far as the peculiarities of CIs are concerned, it may be useful to focus on them solely in the research. Ibn-e-Hassan and Talib (2015) claim that studies on policy-driven clusters are still rather scant, yet needed.

Staber (2009) contends that the mechanisms by which a learning community is constructed are not the subject of systematic studies in the clustering literature. Thus, our research goes beyond the state-of-the-art knowledge by exposing a more social view on learning in CIs and implementing the CoP theory to gain an additional insight into their learning process. We focus on ways that social learning occurs rather than channels or dimensions of learning, as prior studies have done so far. Furthermore, we stress the role of CoPs in social learning in CIs and how this relates to the level of involvement of their members. We show the trajectory of the emergence of various CoPs in CIs. The paper adds to the relatively insufficiently developed studies on CIs in the clustering literature with regard to social learning and focuses on more typical forms of clusters in Europe, namely top-down

[1] Also called policy-driven clusters, state-led clusters, see Ibn-e-Hassan & Talib (2015); Obadić (2013); Richardson (2013)

Competitiveness Review

and bottom-up CIs (Sölvell, 2008) in one European country, i.e. Poland. The CIs in Europe create a relatively diversified universe with respect to their setting, objectives, organization and performance, which justifies the reason for studying them within a single state and with a qualitative approach.

The discourse is organized in the following manner. Firstly, it contains a literature review that delineates CIs from clusters as well as regarding the meaning of collective/social learning in the clustering literature, the identification of the research gap and the theoretical background of the study. Secondly, the paper includes details with regard to the methodology. Thirdly, it reports the empirical results. Finally, a discussion and conclusions are provided.

2 LITERATURE REVIEW

2.1 Clusters vs. cluster initiatives

Cluster initiatives are an idiosyncratic form of clusters. The clustering literature concerning clusters and recently CIs has significantly developed since the 1980s (e.g. Enright, 1996, 2003; Cooke, 2002; DeBresson, 1996; Lis & Lis, 2014; Parrilli et al. 2010; Porter, 1998, 2000, 2008; Rosenfeld, 1997; Swann & Prevezer, 1996), while the concept of industrial clusters as a certain concentration of firms, institutions and other entities linked through industries in a given geographical location was first introduced by Porter (1990, 2000). Since then, clusters have been scrutinized from different angles and disciplines as scholars wanted to discover how they function, develop and contribute to the growth of interrelated firms, regions and economies (Brosnan et al., 2016). Clusters are defined as "geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (for example, universities, standards agencies, and trade associations) in particular fields that compete but also cooperate" (Porter, 2008, p. 213-214). This understanding of the cluster coincides with other theories regarding the connections among business entities and the consequences of these connections for economic growth and development (Feser, 1998). This group of theories includes, in particular, Marshallian industrial districts (Marshall, 1890) and their Italian version – Italian industrial districts (Becattini 2002; Becattini et al., 1990; Bellandi, 2002; Sforzi, 2002).

Clusters facilitate an exchange of business information, know-how, and technological expertise, which in turn may produce knowledge externalities, in particular, in knowledge-intensive and creative industries (Wang & Helms, 2019). In this respect, clusters can be treated as "dynamic arrangements based on knowledge creation, increasing returns (…) and innovation" (Sölvell, 2008, p. 15). They not only provide their members with participation in social networks, which can diminish transaction costs and improve efficiency (Giuliani, Maffioli, Pacheco, Pietrobell & Stucchi, 2014), but they are also sources of learning in the local/national context. They may also enable their members access to global production networks or a pipeline of knowledge (Geenhuizen & Nijkamp, 2012; Upadhyayula, Dhandapani & Karna, 2017), e.g. if they include multinational corporations, their subcontractors or affiliates, or when they support export, cooperation with foreign clusters or participation in

Competitiveness Review

international fairs. As a result, learning is one of the main concepts that have been analyzed in the studies on clusters, both theoretical and empirical ones (Li, Haoyi & Wenbin, 2008; Staber, 2009) (see par. 2.2).

A conviction that clusters are beneficial for regional economies and development was reflected to support their development through appropriate policies (Obadić, 2013). Consequently, a new term was coined, i.e. 'cluster initiatives', namely "organized efforts to increase the growth and competitiveness of clusters within a region, involving cluster firms, government and/or the research community" (Sölvell et al., 2003, p. 15). A cluster initiative can be understood as a formally established organization functioning at a higher level of aggregation, composed of institutional members (and units comprising them) who consciously and voluntarily joined it, combining with one another in cooperation to achieve collective goals (related to the development of a specific cluster) and/or individual goals (related to their own development) (Lis, 2018).

A cluster initiative can be treated as a working cluster. According to the Enright (1996, 2003) typology, modified by Rosenfeld (1997), clusters can be divided into three groups: potential clusters ("wannabe"), latent clusters ("underachieving") and working clusters ("overachieving"). A working cluster is a structure with high self-awareness, able to fully take advantage of its own potential and achieve the synergy effect. A developed and specialized infrastructure (social and institutional), facilitating the flow of information and the development of connections among individual elements of the cluster, is an attribute distinguishing between working clusters and potential or latent clusters. Furthermore, due to the legal basis of activity, CIs can be divided into formal and informal (Knorringa & Meyer-Stamer, 1998). CIs may formalize their cooperation on the basis of various contracts provided in the legislation. Cluster initiatives can also be analyzed by the way in which the clusters are brought to life. With regard to this division, a distinction is made between bottom-up and top-down (induced by public policies) CIs. As far as the first category is concerned, such CIs are created primarily on the basis of endogenous factors such as natural resources, resources developed in the region, and industrial traditions. The bottom-up term emphasizes the willingness of enterprises to cooperate towards the further development of existing relationships among the partners. The creation of top-down structures primarily involves entities beyond the business sector, e.g. R&D sector institutions, business-related institutions as well as public authorities. The research from Sölvell et al. (2003) shows that bottom-up CIs are often launched in response to a crisis, while top-down ones are a result of governmental programs. The literature also provides the term "Cluster Development Programs" (CDP), which, closely related to the concept of CIs, defines them as "(…) public interventions that foster the beneficial effects of economies of agglomeration by creating a set of incentives to overcome the coordination failures that hamper the development of some industries in specific localities" (Maffioli et al., 2016, p. 9). The development of CIs, particularly in Europe, has been the result of various development programs implemented at the EU level under the Lisbon Strategy 2000-2010 and in the current EU strategy "Europe 2020: A strategy for smart, sustainable and

Competitiveness Review

inclusive growth" (2010-2020) as well as at the level of individual countries and regions. The funds allocated in these programs are intended for launching and developing CIs, which is indirectly supposed to contribute to the development of clusters.

Although the literature on CIs has grown substantially, it remains somewhat underdeveloped since it does not fully capture the genuine nature of CIs, which are created to develop clusters. In particular, it has not sufficiently examined how CIs can shape knowledge-related processes. It is limited only to analyses of the consequences of cooperation undertaken within clusters (considered in economic categories). Learning can be seen as a vital driver in the life cycles of both CIs and clusters (Giuliani, 2011; Liu, 2012; Menzel & Fornahl, 2010). Nevertheless, differences among companies located in clusters and CIs may occur (Ibn-e-Hassan & Talib, 2015; Richardson, 2013; Richardson, Yamin & Sinkovics, 2012), which impacts their social learning. Furthermore, CIs can galvanize and motivate their members to be more engaged in order to support learning, as our study shows (see par. 4). In the view of the authors, the distinctive features of CIs and their popularity in Europe, contrary to 'organic' clusters, justify focusing on them in research.

2.2 Social learning

The emphasis on learning in the clustering literature can be found in several concepts such as epistemic communities, learning networks, learning by interactions, learning regions, regional innovation systems, innovative milieu, innovation ecosystems or hot spots (Staber, 2009; Lis, 2018, 2019). All these concepts are rooted in the concept of the Marshallian industrial district (Becattini, 1990; Brosnan et al., 2016; Marshal, 1890; Porter & Ketels, 2009), which emphasizes the existence of external agglomerations deriving from a labor market with specialized skills, access to non-commercial outlays specific to a given industry, and knowledge spillovers. Having applied such a theoretical basis, scholars have examined the relationship between learning in clusters and innovations, knowledge flows, learning channels and learning dimensions, the role of institutions in supporting cluster learning, learning mechanisms, the role of spatial proximity in learning, etc. (Capello, 1999; Cotic-Svetina et al., 2008; Keeble & Wilkinson, 1999; Li et al., 2008; Lin et al., 2014; Parrilli et al., 2010; Svetina & Jaklic, 2008).

Collective learning (also known as localized or interactive learning) is the core, yet rather a fuzzy concept in the clustering literature and almost absent in studies on CIs (see Table 1) (Capello, 1999; Cotic-Svetina et al., 2008; Keeble & Wilkinson, 1999; Lin et al., 2014; Staber, 2009; Svetina & Jaklic, 2008). It is perceived as a social process that leads to knowledge accumulation via shared rules and procedures. The process is social and individuals are involved in practices in search of a solution to a problem. Their exchange, modification of practices and the commitment of individuals form the foundation for an informal learning process (Beerepoot, 2008). Such practices reflect the way work is done (Capello, 1999; Perez-Aleman, 2011) and are situated in a context (Mozzato & Bitencourt, 2014). The understanding of collective learning is indeed social learning, i.e. learning through

Competitiveness Review

individual participation in social life via engaging in activities, conversations, reflections, etc., where interactions with others are of vital significance (Capello, 1999; Wenger, 2010). Capello (1999) indicates that a crucial difference exists between the concept of learning and collective learning as the latter occurs in a socialized way via an interactive mechanism. Collective learning is "learning through interactive and communicative action creating synergy" and it "brings about shared knowledge and understanding concerning something that was not previously known or understood among the interacting agents" (Döös and Wilhelmson, 2011, p. 489). It "generates social processes of cumulative knowledge creation and exploitation" (Capello, 1999, p. 730). Thus, collective learning can be associated with social learning and social theories of learning may add to its deeper comprehension[2]. Social learning exhibits changes in individual understanding through social interactions among various actors within different social networks. It is about the process of change and participation in communities of practice (see par. 2.3) (Nicolletti, Lutti, Souza & Pagotto, 2019; Rogge, Theesfeld & Strassner, 2020). Moreover, "social learning often requires flexible, spontaneous and sustained participation" (Ison, Blackmore & Iaquinto, 2013, p. 36).

It needs to be highlighted that collective/social learning goes beyond individual knowledge, skills or competences. The characteristics of a CI and of those who represent it determine the scope of such learning (Beerepoot, 2008). Furthermore, as proved by Staber (2009), members learn with one another and from others, which does not necessarily assume close interactions each time. Additionally, learning outcomes are not always beneficial. Social interactions, cognitive proximity, social capital and other aspects of clusters contribute to social learning among their members. In addition, collective/social learning can be perceived as a deliberate activity of cluster firms "to intentionally share, coproduce, and disseminate knowledge through the establishment of a community of practice" (Wang & Helms, 2019, p. 2).

It appears to be paradoxical that the number of studies on learning in the clustering literature is substantial, yet research that is solely focused on collective/social learning, its key concept, is insufficient, particularly regarding CIs (Table 1). Moreover, a closer look at the search results concerning a pair of keywords 'cluster' and 'social learning' shows that all the papers have been irrelevant to clusters. Svetina and Jaklic (2008) emphasize that the concept of collective learning in the clustering literature is under-theorized, so there is a need to conduct more theoretically-oriented studies, whereas "empirically, it has been treated in a somewhat cavalier fashion" (Staber, 2009, p. 555). Additionally, social learning theories have been rarely applied in the clustering literature to analyze collective/social learning. This makes the current empirical study an important and interesting scientific inquiry into what ways social learning occurs in CIs and how social learning is facilitated through the emergence and evolution of various CoPs in CIs. Through our research, we expand the theoretical base of generally lacking studies on social learning in CIs in the clustering literature. Since

[2] Due to the social nature of collective learning, in the subsequent part of the paper we treat collective learning and social learning as synonyms.

Competitiveness Review

the CoP theory has been sparsely implemented in the management literature, we also augment this specific research field. Our findings can help CIs to stimulate their members to be more involved in order to improve their social learning.

Table 1

2.3 Social learning in communities of practice

The communities of practice theory (Wenger, 1998, 2009, 2010) provides an interesting contribution to the explanation of the ways that social learning occurs and the role of various communities in the process. Therefore, it may be applied to the context of CIs as they contain groups of enterprise representatives that interact on a more or less regular basis (Wang & Helms, 2019). CIs as CoPs have an emergent structure with complex relationships, both formal and informal (Dessne & Byström, 2015). They organize themselves, have flexible and dynamic boundaries and their ongoing negotiation helps them to create an identity and cultural meanings.

According to the theory, a CoP is initially a loose network which, with the gradual growth of connections among members, transforms into a community. A CoP is "an emerging informal network or structure based on engaged participation by members in a joint" organization (Dessne and Byström, 2015, p. 2278). It is described as a relational space binding individuals through interactions and shared expertise (Wang & Helms, 2019). The need for more systematic interactions increases when members develop the sense of a shared domain. Discovering that others face similar problems may induce learning from one another. A CoP constitutes a common base of knowledge among various individuals allowing participants to co-ordinate their actions to successfully manage problems. The negotiation of meanings contributes to the development of practices, which is a property of a community. As a result, a CoP has three attributes, namely domain, community and practice. "The domain brings people together and guides their learning, the community consists of the social ties between individuals sharing the domain, and the practice covers the means used to act within the domain" (Dessne and Byström, 2015, p. 2279).

The CoP theory claims that social learning is more than merely acquiring knowledge and skills. It is a social becoming, i.e. developing a certain identity; it is also a production of practices (Wenger, 2010). People learn in social relationships, while their participation in a CoP may be full or peripheral (Dessne & Byström, 2015).

CoPs were initially portrayed as emergent and informal structures with voluntary membership. However, later works regarding CoPs also suggest that CoPs may be designed and managed to facilitate learning (for their overview, see Dessne and Byström, 2015). Since clusters or CIs are, by definition, social communities (Castro, 2015; Gausdal, 2008; Giuliani, 2011; Staber, 2009; Turner, 2010; Wang & Helms, 2019), the creation of CIs may, on the one hand, be considered as a development of CoPs, while on the other hand, different spontaneous CoPs can emerge within CIs

Competitiveness Review

with their own practices related to their domains, meanings and identities. As the theory predicts, "communities emerge, merge, split, compete, complement each other, and disappear" (Wenger, 2010, p. 182).

Concerning the application of the CoP theory to the studies on clusters, we found just a few works, none of which referred to CIs. Consequently, a vital gap is noticeable in the extant knowledge on CIs in this respect. Wang and Helms (2019) notice that the accumulation of knowledge-based assets in a region can be achieved through a CoP or Marshallian externalities, or their combination, consequently enhancing a locational competitive advantage of clustered organizations. Nevertheless, their study investigated geographically isolated and remote firms. Other authors have analyzed CoPs composed of enterprises and organizations in a region organized through professional associations (Faulconbridge, 2007; Turner, 2010). In her qualitative study, Gausdal (2008) showed how an educational program by a CoP helped to invigorate the Electric Coast cluster and how the CoP contributed to collective learning. Giuliani (2011) applied a CoP lens to scrutinize the role of technological gatekeepers in localized learning in a wine cluster. Finally, Castro (2015) proposed considering clusters as CoPs and adopting a community-based knowledge management approach to support innovation.

The above overview shows the rather limited application of the CoP theory in research on clusters and an opportunity to expand it regarding social learning in CIs. The theoretical framework allows the prediction that various CoPs may emerge within CIs with their specific domains, practices and identities. Moreover, the participation of CI members in these CoPs can be more selective, i.e. some members choose a more peripheral than full participation, which results in the occurrence of learning in different ways.

3 METHODOLOGY AND SAMPLE

3.1 Research method and participants

The paper reports the results of an explorative qualitative study, the aim of which was to analyze social learning in cooperative relationships in CIs. The choice of CIs (not clusters) as the research subject was justified by the identified cognitive gap (see introduction and par. 2.2). CIs are hardly studied in the literature, yet increasingly popular in business practice.

This is part of a larger study aimed at identifying the levels of advancement of cooperation among enterprises in selected CIs in Poland (Lis, 2018). The study introduced the concept of 'trajectory' for the development of cooperative relationships in CIs. It was found that they develop in four stages, namely the transition from level I "Integration at the unit level", through level II "Allocation and integration at the process level" and level III "Impact on the environment", and end on level IV "Creation and integration at the organizational level". Each stage has different goals. Along with the

Competitiveness Review

transition from one stage to the next, the role of CIs, the involvement of cluster members, and the pool of received benefits also change.

The questions stated in the current study are as follows: What ways does social learning occur in CIs? How is social learning facilitated through the emergence and evolution of various CoPs in CIs? Both the aforementioned concepts of the trajectory of development of CIs, as well as additional research threads, i.e. social learning, are the result of the abductive approach applied in the larger study (Lis, 2018). Abduction, derived from the Peirce philosophy (1931, 1958), consists of discovering and interpreting the observed data (Dubois & Gadde, 2002). When analyzing the results of the preceding research, we noticed some additional threads related to processes in CIs and we attempted to find the best explanation for them. We were prompted to conduct an additional literature review to familiarize ourselves with the-state-of-the-art knowledge and, consequently, this led us to the topic of social learning and CoPs. As a result, the CoP theory has become the theoretical background for the interpretation of our findings.

Based on the theoretical underpinnings of the study (Dessne & Byström, 2015; Wenger, 2010), it is predicted that various CoPs emerge within CIs with their own domains, practices and identities. It is also anticipated that member participation in these CoPs is more selective, i.e. some members choose a more peripheral than full participation, with different consequences for learning.

The sample consisted of four CIs located in Poland (Table 2). In the selection of the CIs, extreme cases logic was used to ensure maximum variability and diversity within the research field. Taking the economic sector as the main differentiating criterion, four CIs were selected for the study – two CIs from the metal industry and two CIs representing the information and communication technologies (ICT) industry. All four CIs are formal organizations created as a result of the large involvement of the enterprises. Given the type of CIs, one of them (Metal Cluster A) is a bottom-up initiative, while the other three are mixed forms. R&D institutions were the main initiators of the studied ICT initiatives, while non-governmental sector institutions played the biggest role in launching both metal initiatives.

On the one hand, the dissimilarity of the two selected sectors was considered to be a factor potentially revealing the development of cooperative relationships among cluster partners. On the other hand, the similarity of the surveyed entities was required as they should therefore present above-average (taking into account the overall population of CIs in Poland) organizational maturity. It can be predicted that in mature CIs, cluster mechanisms are better developed, especially in the context of social learning. We assumed that organizational maturity may be manifested by the age of a CI (measured by the number of years since the CI was created), its size (measured by the number of its members) and scope (local, regional, nationwide). In the context of organizational maturity, we also took into account the length of membership. The participants of the study were primarily members with a long membership period (the vast majority of them had been involved in the CIs since their inception), whose involvement in CI activities exceeded the average for a given CI. The choice of longer term cluster members for the study was motivated by the need to ensure the same plane of

Competitiveness Review

comparison regarding the surveyed entities since all of them potentially had similar chances, related to the length of their membership, of achieving various benefits from their participation in their given CI, including participation in social learning.

Table 2

Another aspect that needs to be stressed with regard to CIs is the vital role of the representatives of CI members, who are individuals delegated to represent the interests of their employing organizations. Apart from activities directed at establishing institutional relations among various members, they undertake and maintain personal relationships which have various effects for CIs and their organizations. In this paper, the authors adopt the individual perspective of these representatives while studying social learning in CIs.

The study was based on individual in-depth interviews with the representatives of the CI organizations – a total of 35 interviewees representing the selected CIs participated in the research and their selection was based on the snowball technique (Goodman, 1961). The use of the snowball technique, on the one hand, allowed the identification of the most involved cluster members (which was one of the criteria for sample selection), yet on the other hand, it could bring about too much similarity within the sample. Therefore, the selection of entities was carried out carefully, taking into account the above threat. It was assumed that entities representing various types of activities should participate in the study. As a result, these were the coordinators and representatives of members of the selected CIs, mainly cluster companies, but also – to broaden the perspective – R&D institutions, educational institutions and support institutions. The coordinators were represented by employees delegated to run the CI (see Table 2).

We talked to the so-called key informants (Kumar, Stern & Anderson, 1993), namely the individuals with the most comprehensive knowledge of the functioning of a given CI and the role of their parent organizations in the CI. The respondents, on behalf of the cluster members, were the owners of companies or top managers and people selected to represent the organization in the CI.

About 44 hours of interviews were conducted in the offices of the surveyed companies and institutions in the first half of 2016; the average length of each interview was 75 minutes.

The interview questions were divided into the following sections: 1) forms of cooperation in CIs; 2) involvement of the coordinator and members in CIs; 3) development of relationships and building trust in CIs; 4) creating opportunities and achieving benefits in CIs; 5) flows of knowledge and information in CIs.

To describe the four CIs in the sample, additional information was acquired via interviews with the representatives of the CIs and an analysis of the documents and web resources of each CI. Hence, the study ensures methodological and data triangulations (Maxwell, 2005) since it applies multiple

Competitiveness Review

methods of data collection (i.e. interviews and document analysis) and multiple sources to gather information within a given method (i.e. the interviewees representing different CI members).

3.2 Analytical procedure

The conventional qualitative content analysis procedure (Hsieh & Shannon, 2005) was applied to analyze the interviews. With regard to the coding schemes, the researchers constantly compared each interview and theme to inductively delimit codes from the data (Glaser & Strauss, 1999).

The analysis included three steps, i.e. open, axial and selective coding. In the open coding stage, some common themes were identified emerging from the interviews in each CI. For instance, these were 'dead souls', 'distrust', 'inspiring', 'co-creation of knowledge'. In the axial coding stage, each theme was classified with respect to the four identified categories and their peculiarities concerning cooperative relationships (interactions) in the CIs (Table 3). At the final, selective coding stage, the categories and their peculiarities were horizontally grouped to feature the strength of interactions, symptoms of learning and the type of received resources at each involvement level (Table 4).

Table 3

Table 4

Referring to the first main category, "the involvement level", which defines the specificity of cluster members, it should be emphasized that it was not possible to select a research sample consistent with this category and its four peculiarities (dead souls, participants, cooperators and locomotives). The logic was inverse – based on the abductive approach, this category emerged from the collected data, as did the other three categories and their properties. It should be emphasized that the four selected groups (properties of the "involvement level" category) were distinguished in relation to all the cluster members, not only the respondents. Nevertheless, the respondents, due to their above average involvement, represented three distinguished groups (classified later as CoPs): primarily, the participants and the cooperators as well as (although much less often) the locomotives. However, based on the conducted interviews (especially with the coordinators), the fourth and at the same time least involved group was identified – the dead souls.

4 EMPIRICAL FINDINGS AND DISCUSSION

4.1 Results

Competitiveness Review

4.1.1 The involvement level, the strength of interactions and the emergence and evolution of communities

The conducted research allowed four main groups of members (and three communities) to be identified according to their level of involvement (Figure 1). The shape of the triangle reflects the decreasing number of members included in each level.

The research shows that the largest group comprised entities not involved in CI activities, so-called 'dead souls' (this term was borrowed from the interviewees). From the formal point of view, these entities were members of the CIs but their participation in the initiative was limited to the payment of membership fees, which ensured that they held the status of member and had access to the information sent by the CI (by coordinators and other members) via communication technologies. At the second level, there were active members – 'participants', although their activity was mainly based on their participation in the meetings organized on the CI forum. Levels three and four were dominated by the most active members, who, in order to achieve specific goals, took part in working groups and project groups or consortia. These goals may be related to the benefits of greater involvement such as creating a base network of relationships among the cluster partners, obtaining access to an increased pool of resources, increasing quality or reducing costs, affecting the external environment or creating common added value (e.g. through innovation). The main difference between the third and fourth level is that the former – 'cooperators' – joined the CIs for the purpose of cooperation initiated by other cluster entities, adapting to the rules governing the given group (working or project ones). In turn, the fourth and smallest sub-set of the CIs – 'locomotives' – describes those entities that initiated these forms of cooperation within the CIs themselves, involving other cluster members in their ideas.

With regard to identity among these groups, the dead souls were brought to the CIs to collect information from their environment; however, they did not identify with the CIs and weakly so with one another. By contrast, the participants developed their identification with the CIs, which were used for establishing contacts, developing relationships and exchanging resources. The cooperators were imitators rather than initiators, and their identity was strong, yet only with the working groups they were involved in. The last community, the locomotives, identified strongly with their project groups in the CIs and was selective in accepting new members in the groups. The locomotives initiated them to create added value through the execution of projects and the development of knowledge.

As the study shows, the entity's location at a given level was, to a large extent, related to their involvement in the CI activities (the greater the involvement, the higher the level). This, in turn, was largely associated with the period of membership and many other factors (such as matching the company profile to the CI profile, the company location, the motivation of the people representing the company in the CI, etc.). However, it was observed that the largest involvement occurred in the case of those members who participated in the establishment of the surveyed CIs.

Competitiveness Review

Due to the fact that the assignment to a given community was strongly associated with involvement, which is a variable that changes over time, i.e. may increase or decrease, the study showed that some cluster members changed their groups, yet this was not a common practice. It occurred relatively rarely at the first level (transformation from dead souls into participants), which may indicate that the members of this group did not intend to increase their involvement in activities undertaken within their CI. A community change most often occurred between the second and the third level, when the participants began to realize the benefits of participating in higher forms of cluster cooperation and felt the need for greater involvement. This moved them to the position of cooperators. Nevertheless, the last possible transformation of cooperators into locomotives happened very seldom (these were individual cases), when a given cooperator-subject, inspired by cooperation with the entity-locomotive began to exhibit similar activities. Based on the interviewees' accounts, we did not notice a direct transition from the second level (participants) to the fourth level (locomotives). In Figure 1, the directions of migration among the identified CoPs are marked with arrows, where the thickness of the arrows reflects the frequency of occurrence of the given migration. The study also revealed that if the involvement of cluster entities was insufficient, then the given community disappeared – this situation was observed among some cooperators.

Figure 1

At each level, a different strength of social interactions among the cluster members was also observed, as reflected in the illustrative citations presented in Table 5.

Table 5

At the first level, the cluster members had very limited opportunities to establish contacts with other participants. A lack of commitment hindered the development of any relationship. The more active the members were, the stronger interactions they had with other selected members of the CIs. Together with increasing involvement, the interactions among the members developed, moving from the phase of removing the barrier of anonymity (the second level) by gradually removing the barrier of distrust (levels three and four). Cooperation in working and project groups resulted in frequent interactions among the partners, which strengthened the relationships in these groups. The existing community of goals (and often also the commonality of interests or, in other words, the shared domain), additionally helped in the development of trust. This referred, in particular, to project groups, as subsequent projects implemented with a similar composition of participants allowed for the

Competitiveness Review

verification of trust, which, in consequence, led to the separation of these subsets in the structure of the CIs. During the project implementation, these were rather formal subsets. Nevertheless, the ties established among the partners, and their shared experiences, constituted informal subsets of members within the studied CIs.

When comparing the CIs, it could be seen that the CoPs identified in the study occurred in the studied CIs with varying intensity. Each CI (regardless of the industry) included the first three identified groups, while the locomotives were noticed only in ICT initiatives, which may be due to the specificity of this sector (focus on project activities). At the same time, in these CIs, the dead souls and the participants were more numerous, which can be explained by the size of these initiatives (they were much larger than the metal CIs). The cooperators were apparent in both the metal and the ICT initiatives, but the involvement of the members of these CIs was quite different. In the metal initiatives, the activities undertaken by the cooperators were aimed at achieving collective benefits from the angle of the region and the industry, related to adjusting the educational profile in the region to the needs of the companies. Conversely, the activity of the cooperators in the ICT initiatives was focused on achieving mainly individual goals connected to facilitating access to resources or the pooling of resources in order to generate added value, by increasing quality or reducing costs.

4.1.2 Ways that learning occurs

Based on the obtained research results, eight ways that learning occurs in CIs were identified. For simplicity, they are presented as two examples at each distinguished level, though they are additive in nature – at each next level new forms appeared, yet the manifestations identified at the earlier level did not disappear. As a result, at the highest level of involvement, all the identified symptoms of learning occurred (Table 6).

Table 6

At the first level, two basic ways of learning were observed – information transfer and raising awareness. In both cases, the inactive cluster members (dead souls) were primarily the recipients. The gained benefits referred to access to information about the initiative (and its members) and the closest environment of their organizations and the CI. The information obtained at this level, usually appearing in a large amount, was very general and poorly personalized.

At the second level, the two previous ways of learning were still present, namely information transfer and raising awareness, but in contrast to the first level, the members of the CIs (participants) were not only the recipients but also the donors. Due to their involvement, they achieved additional benefits such as access to much more detailed information, more suitable for their business profile. This information concerned the other members of the CI, and facilitated the identification of sources of missing resources and favored their exchange within the CIs. In addition, the cluster entities at this

Competitiveness Review

level of involvement were given priority in gaining important information on changes in the environment, which placed them in a privileged position in relation to entities from outside the CIs.

The cluster members that managed to enter the third level of involvement (cooperators) had better opportunities (compared to the previous two levels) to use the effects of demonstration and inspiration. This worked both ways because, on the one hand, the members of the working and project groups acted as demonstrators and inspired the others by their achievements, while on the other hand, they could observe the other partners and gain inspiration from them. Both symptoms of learning (demonstrating and inspiring) occurred most often in an unconscious way. The involvement of the entities in these most mature forms of cooperation facilitated the acquisition of knowledge resources not available at the lower levels. First and foremost, it was tacit knowledge, difficult to codify and transfer.

The most involved group of cluster members – locomotives – undertook conscious activities aimed at motivating and educating the other participants. Although bidirectional actions were observed at this level, the locomotives were, above all, the giving side rather than the receiving one. Over time, the desire to balance input-output motivated this group to engage in cooperation with equally highly motivated and involved participants with a similar innovation potential. This resulted in the formation of closed subgroups with high entry barriers. At this stage, owing to their great involvement (Table 9), the participants were able to share their knowledge in order to achieve mutual benefits as well as to co-create knowledge based on their competences.

Referring to the two sectors of CIs participating in the study, the ICT and metal initiatives, the distinguished ways of learning coincided with the previously identified CoPs. Consequently, in the metal CIs, they ended with third-level learning forms (demonstrating and inspiring), while in the ICT initiatives, all eight ways of learning were observed, including motivating and educating.

4.2 Discussion

The empirical findings suggest that whatever learning occurred in the CIs (i.e. one-way or two-way information transfer and raising awareness, demonstrating and inspiring, motivating and educating) it was related to the strength of interactions among their members (Figure 2), which reveals the social nature of learning in CIs. This is consistent with previous research, which showed that cluster members learn with one another and from others even when the interactions are not close (Staber, 2009). Beginning from the second level of involvement, different CoPs emerged (participants, cooperators and locomotives) with their characteristic practices (Table 7). Our research has portrayed a collective journey in the learning process, where the members of CIs joined, created or changed their CoPs to better adjust their participation in CIs to their own objectives. Each CoP presented a different stage of development (described as the strength of interactions and the level of involvement), which was further reflected in the ways social learning occurred in a given CoP as well as its domain, identity and practices.

Competitiveness Review

Involvement in CoPs, which has been demonstrated in this study as the basis for trust-building and social learning, is also strongly emphasized in the concept of a development trajectory (discussed in a more extended study, while the current one serves as a scientific component) (Lis, 2018). The concept of trajectory reflects the dynamic approach to the development of cluster entities. According to this concept, along with the transition to higher levels of CI development, the set of goals, the roles fulfilled by CIs, the received benefits as well as forms of cooperation (and involvement) change. To the best of our knowledge, there is a lack of publications that would adopt a dynamic approach to cooperation in CIs, in contrast with cluster development models, which are very well-grounded in the literature (i.e. Bergman, 2008; Gordon & McCann, 2000; Smith & Brown, 2009; Malakauskaite & Navickas, 2011; Pouder & John, 1996; Rosenfeld, 2002). Although these are dynamic models, they relate to clusters understood in economic terms, not CIs treated as a kind of organization. A model of development of CIs was proposed by Sölvell, Lindqvist and Ketels (Sölvell et al., 2003; Lindqvist et al., 2013), but it does not describe the development of cooperative relationships in CIs so thoroughly. However, it needs to be stressed that in the social network models of cluster development (Gordon & McCann, 2000; Smith & Brown, 2009), the strength of relationships (similar to our 'strength of interactions') - the so-called level of 'embeddedness' of the social network, is described.

Furthermore, we wish to emphasize that social learning in CIs was not the subject of the extended study, i.e. the interview scenario did not include questions directly tackling this phenomenon. We discovered it in the course of an additional analysis and interpretation of the collected data. Such an approach is coherent with abduction theory, as our new discoveries provoked us to look for further explanation in the theoretical background having found it congruent and insightful after once again reviewing the literature.

Figure 2

Table 7

In addition, involvement (or in other words, engagement – doing things together) is emphasized in the CoP theory as it is reflected in belonging to a community (Chapple, Molthan, Rachel & Michael, 2020). It can profoundly shape individual experiences of learning in social interactions, as we also observed in our study.

The findings are coherent with our theoretical assumptions and show that CIs can be seen as formally established CoPs (Wang & Helms, 2019). However, they split spontaneously into smaller

Competitiveness Review

communities to meet the objectives of their members (Wenger, 2010). Additionally, the research reveals that the CoPs at the second level were less mature with practices and featured underdeveloped identities, while the CoPs at higher levels (three and four) presented deeper involvement, a wider spectrum of practices, awareness of their identity and a selective choice of community members. During and after the fulfillment of projects, it is likely that both the conscious and formal development of inner CoPs is observed (with a separation of project groups from other members of the CIs) as well as the less conscious and spontaneous formation of CoPs when the interactions developed in projects were still vibrant after project completion. Furthermore, less mature CoPs in terms of their members' involvement may not advance and may disappear. Likewise, even mature CoPs without new projects at hand can vanish. This observation is consistent with the assumptions of the CoP theory concerning changes in communities (Wenger, 2010) (see also par. 2.3).

In conformity with the CoP theory and prior studies on CoPs (Dessne & Byström, 2015; Wenger, 2010), the study reveals that the boundaries of each identified CoP are rather flexible since the members can decide which level of involvement is sufficient for them and whether their participation is more peripheral (like in the case of the participants), almost full (in the case of the cooperators) or full (the locomotives). They can transfer between CoPs and intensify their involvement to meet their objectives. The research additionally reveals that when the strength of interactions increases, CoPs change their shared domain and identities, which reflects their social learning. Furthermore, the study has shown that the identification of the most active members of CIs with their CoPs is stronger than with their CIs as a whole, while the least mature groups failed to create a collective identity, a shared domain or substantial practices. Underdeveloped identity, as in the case of dead souls, created barriers to the deeper involvement of members and their social learning. This evidence is consistent with the assumptions of the CoP theory (Chapple et al., 2020).

To sum up, the study provides evidence that various CoPs emerged within the CIs with their own domains, practices and identities. The participation of members in these CoPs was rather selective, i.e. some members chose a more peripheral than full participation, which was reflected in the ways that social learning occurred.

5 CONCLUSIONS

5.1 Contribution and practical implications

5.1.1 Research contribution

The study has documented indications of social learning in CIs via the interactions that their members are involved in, namely one-way or two-way information transfer and raising awareness, demonstrating and inspiring and, finally, motivating and educating. It has portrayed the ways social learning occurred in CIs, i.e. through the emergence and evolution of various CoPs with their domains, practices and identities. The findings have shown at which level of involvement the groups evolved into CoPs and adopted their unique domains and identities.

Competitiveness Review

The results add both theoretically and empirically to the state-of-the-art knowledge in the still underdeveloped literature on CIs. Firstly, they have exposed a more social view on learning in CIs. Secondly, social learning theories have been rarely applied in the clustering literature to analyze collective/social learning, while the authors have implemented the CoP theory, nearly absent in the clustering studies (Wang & Helms, 2019), and have presented the emergence of CoPs in CIs. Social learning has been portrayed as a collective journey within and between CoPs, where the interactions of their members deepened their level of involvement and helped them advance learning in their CoP. The research has identified three CoPs in the studied CIs which varied in terms of how they supported the occurrence of learning. Furthermore, it has stressed the role of CoPs in social learning in CIs and how this is related to the level of involvement of the CI members. With an increase in involvement, CI members have formed more selective CoPs and strengthened their social learning.

Moreover, as indicated in the paper, the CoP theory has been infrequently addressed in the management literature. Subsequently, this study expands this specific research field.

Additionally, the research augments prior research as we have solely focused on CIs (so distinctive from clusters), responding to calls by Ibn-e-Hassan and Talib (2015). Moreover, the study has revealed, in conformity with previous works (Staber, 2009; Ter Wal, 2013), that geographical proximity may not be a sufficient factor for collective/social learning to occur. It suggests that social learning is induced by deeper involvement in the practices of CoPs, which is related to how the members perceive the benefits from such interactions. It also implies that the more the interactions increase, the more the social learning may intensify (Svetina & Jaklic, 2008).

Last but not least, our study has exhibited various manifestations of social learning in CIs via the emergence and evolution of CoPs.

5.1.2 Policy and practical implications

The empirical findings can also suggest a policy and some practical implications for coordinators, members and authorities of CIs. Knowledge of the identified relationships within the involvement level, the strength of interaction and learning in CIs, anchored in a larger concept that shows the trajectory of the development of CIs, can help these organizations to take conscious actions focused on the development and creation of CoPs. With regard to practitioners, the coordinators of CIs should stimulate the activity of members through indicating opportunities for entry into more mature CoPs and showing the benefits of deeper involvement, such as greater access to better tailored knowledge, participation in innovative projects, and social learning. The examples of practices identified in the study (that were aimed at developing interactions among the cluster members and implementing them in the other CIs) may support social learning processes. Such practices can also be collected and distributed in the form of a code of good practice. Moreover, actual success stories can be better publicized. In addition, the research suggests that coordinators may motivate and lead CI members in their collective journey to reach higher levels of involvement in their CIs and become part of the most active groups owing to the greater benefits they offer. They should also put effort into building a

Competitiveness Review

collective identity of various CoPs in CIs, and of CIs as a whole. Coordinators should adopt boundary spanning roles, i.e. actively cross the boundaries of each CoP in CIs to exchange knowledge and practices. They ought to manage personal relationships and gain legitimacy within various CoPs to help them to develop a collective identity (Chapple et al., 2020). In addition, to ensure the growth of entire CIs, coordinators should create conditions for the development of existing CoPs into higher forms which better support learning.

Furthermore, with regard to the policy implications, the authorities need to apply cluster development programs to support those activities of CIs that are significant to acquire new knowledge in CIs and, subsequently, reach higher innovativeness of their members. Moreover, the study emphasizes that at each stage of the development of CIs, the learning process is carried out on the basis of interactions created among the members. Therefore, it is important that authorities maintain the 'soft' forms of cooperation within CIs – involving the members in their activities, developing interactions and fostering the creation of a collective identity of CIs. Finally, as part of planned development programs, certain measures should be provided to increase the competence level of coordinators and CI members and enhance their awareness as well as strengthen the relationships among CI partners (such as participation in training courses, workshops, conferences, seminars, etc.).

5.2 Limitations and further research

The study is not without limitations.

The first limitation is the small, specific and only slightly diversified research sample (four intentionally selected CIs, 35 interviewees) of CIs and their representatives chosen for the analysis. This limits the possibility of generalizing the conclusions, although the assumptions made at the stage of selecting the research sample (the logic of the sample selection according to extreme cases) allow for a wider universality of the discovered regularities. The analysis of two different sectors of the economy suggests that the observed relationships may also occur in CIs representing other sectors. A certain threat regarding the similarity of the studied entities is associated with the use of the snowball technique, yet it was minimized by an attempt to include various groups of CI entities in the study. We also consider the selection of only engaged cluster members for the research sample as a research limitation, since the study involved only the representatives of three out of the four identified groups. The "dead souls" group, although not represented in the study, emerged from the interviews with the respondents.

The second limitation is the subjectivity which characterizes qualitative research, mainly due to the applied techniques of data collection and analysis. The qualitative interviews used in the study, allowing the respondents to express their opinions freely, created a wide field for subjectivism, even forcing the researcher to interpret the received data.

The third limitation refers to the dynamics of the studied processes. Despite the fact that the applied data acquisition technique (an interview) allows the time factor to be taken into account, the study in the four CIs was carried out in the same period of time. This does not fully capture the

Competitiveness Review

changes occurring over time, especially cause-and-effect relationships, such as the impact of involvement on the benefits gained by CI membership, both of an economic and non-economic nature (e.g. the development of interaction, trust, common group identity, etc.). Finally, we have focused our study on social learning, while for future research, developing involvement in CIs could be analyzed in more detail.

Regarding the results of the study, the aspects associated with learning in the identified CoPs, such as changes in identities and meanings, could have been studied in greater detail, as the role of CIs in building a collective identity could be very important for the policy. These constructs have been inferred from the respondents' accounts; however, they did not directly refer to them in the interviews.

To sum up, based on the study results and the theoretical background, three propositions can be put forward for a further quantitative investigation (Figure 3):

P1: Involvement in the activities undertaken within CIs determines the development of trust and, in turn, affects the strength of interactions among the involved members of CIs.

P2: The strength of the interactions among the involved members of CIs determines social learning and, in turn, affects access to the benefits received by them from CIs.

P3: Involvement in the activities undertaken within CIs determines the development of a common group identity and, in turn, affects access to the benefits received by the involved members from CIs.

Figure 3

In order to fully confirm the observed dependencies outlined in the above-described propositions, it is necessary to carry out quantitative research in a large group of CIs representing various sectors of the economy, e.g. more market-driven CIs (like R&D or Creative Industries) as well as to extend research to CIs in other countries. It is also worth considering CIs in their various stages of development. In addition, to obtain a better understanding of the involvement factor and examine its impact on the other identified variables, future studies should cover cluster entities with different membership periods and different levels of commitment.

The relationships between the variables would be best tested on the basis of structural equation modeling, which allows the determination of the directions of the dependencies of variables and is a matter of importance in the formed propositions. A social network analysis could also help to understand the dynamics of social learning within the identified CoPs and evaluate their structural properties, similarly to the study by Giuliani et al. (2014) on cluster development programs.

References

Becattini, G. (1990). The Marshallian industrial district as a socio-economic notion. In F. Pyke, G.

Competitiveness Review

Becattini G. (2002). Industrial sectors and industrial districts: Tools for industrial analysis. *European Planning Studies*, 10(4), 483–493.

Becattini, G., Pyke, F., & Sengenberger, W. (Eds.). (1990). *Industrial districts and inter-firm co-operation in Italy*. Geneva: International Institute for Labour Studies.

Beerepoot, N. (2005). Collective learning by artisanal subcontractors in a Philippine furniture cluster. *Tijdschrift Voor Economische En Sociale Geografie*, *96*(5), 573–584.

Beerepoot, N. (2008). Diffusion of knowledge and skills through labour markets: evidence from the furniture cluster in Metro Cebu (the Philippines). *Entrepreneurship and Regional Development*, *40*(January), 67–88. https://doi.org/10.1080/08985620701631522

Bellandi M. (2002). Italian industrial districts: An industrial economics interpretation. *European Planning Studies*, 10(4), 425–437.

Brosnan, S., Doyle, E., & Connor, S. O. (2016). From Marshall's Triad to Porter's Diamond: added value? *Competitiveness Review: An International Business Journal*, *26*(5), 500–516. https://doi.org/10.1108/CR-05-2015-0037

Capello, R. (1999). SME clustering and factor productivity: A Milieu production function model. *European Planning Studies*, *7*(6), 719–735.

Castro, L. (2015). Strategizing across boundaries : revisiting knowledge brokering activities in French innovation clusters. *Journal of Knowledge Mangement*, *19*(5), 1048–1068. https://doi.org/10.1108/JKM-02-2015-0050

Chapple, W., Molthan, P., Rachel, H., & Michael, W. (2020). Lights off, spot on: Carbon literacy training crossing boundaries in the television industry. *Journal of Business Ethics*, *162*(4), 813–834. https://doi.org/10.1007/s10551-019-04363-w

Cotic-Svetina, A., Jaklic, M., & Prodan, I. (2008). Does collective learning in clusters contribute to innovation? *Science and Public Policy*, *35*(June), 335–345. https://doi.org/10.3152/030234208X319357

Cooke P. (2002). *Knowledge economies: Clusters, learning and cooperative advantage*. London: Routledge.

Dessne, K., & Byström, K. (2015). Imitating CoPs: Imposing formality on informality. *Journal of the Association for Information Science and Technology*, *66*(11), 2277–2284. https://doi.org/10.1002/asi

Döös, M., & Wilhelmson, L. (2011). Collective learning: Interaction and a shared action arena. *Journal of Workplace Learning*, *23*(8), 487–500. https://doi.org/10.1108/13665621111174852

Dubois A. and Gadde L. E. (2002). Systematic combining: An abductive approach to case research. *Journal of Business Research*, Vol. 55, No. 7, pp. 553-560.

Enright M. J. (2003). Regional clusters: What we know and what we should know. W: J. Bröcker, D. Dohse, R. Soltwedel (red.), *Innovation clusters and interregional competition* (s. 99–129). Berlin Heidelberg: Springer.

Enright M.J. (1996). Regional clusters and economic development: A research agenda. W: U.H. Staber, N.V. Schaefer, B. Sharma (red.). *Business networks*: *Prospects for regional development* (s. 190–213). Berlin: Walter de Gruyter.

Enright, M. J. (2003). Regional clusters: what we know and what we should know. In Bröcker J., Dohse D., & Soltwedel R. (Eds.) *Innovation clusters and interregional competition* (pp. 99-129). Berlin: Springer.

Faulconbridge, J. R. (2007). Exploring the role of professional associations in collective learning in London and New York ' s advertising and law professional-service-firm clusters. *Environment and Planning*, *39*, 965–985. https://doi.org/10.1068/a38190

Feser E.J. (1998). Old and new theories of industry clusters. W: M. Steiner (red.), *Clusters and regional specialisation: On geography, technology, and networks (s.* 18–40). London: Pion.

Competitiveness Review

Gausdal, A. H. (2008). Developing regional communities of practice by network reflection: the case of the Norwegian electronics industry. *Entrepreneurship and Regional Development*, *20*(MAy), 209–235. https://doi.org/10.1080/08985620701748367

Geenhuizen, M. Van, & Nijkamp, P. (2012). Knowledge virtualization and local connectedness among young globalized high-tech companies. *Technological Forecasting & Social Change*, *79*(7), 1179–1191. https://doi.org/10.1016/j.techfore.2012.01.010

Giuliani, E. (2011). The role of technological gatekeepers in the growth of industrial clusters: Evidence from Chile. *Regional Studies*, *45*, 1329–1348.

Giuliani, E., Maffioli, A., Pacheco, M., Pietrobell, C., & Stucchi, R. (2014). Evaluating the impact of Cluster Development Programs. *Circle (Centre for Innovation, Research and Competence in the Learning Economy)*, *10*(June), 1–81.

Glaser, B. G., & Strauss, A. L. (1999). *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Hawthorne, NY: Aldine De Gruyter.

Goodman L. A. (1961). Snowball sampling. *The Annals of Mathematical Statistics*, 32(1), 148-170.

Gordon, I. R., & McCann, P. (2000). Industrial clusters: Complexes, agglomeration and/or social networks? *Urban Studies*, *37*(3), 513–532. https://doi.org/10.1080/0042098002096

Hsieh, H.-F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, *15*(9), 1277–1288.

Ibn-e-Hassan, & Talib, N. A. (2015). State-led cluster development initiatives: A brief anecdote of multimedia super corridor. *Journal of Management Development*, *34*(5), 524–534. https://doi.org/10.1108/JMD-02-2014-0011

Ison, R., Blackmore, C., & Iaquinto, B. L. (2013). Towards systemic and adaptive governance : Exploring the revealing and concealing aspects of contemporary social-learning metaphors. *Ecological Economics*, *87*, 34–42. https://doi.org/10.1016/j.ecolecon.2012.12.016

Keeble, D., & Wilkinson, F. (1999). Collective learning and knowledge development in the evolution of regional clsuters of high technology SMEs in Europe. *Regional Studies*, *Jun*, 295–303.

Knorringa P., Meyer-Stamer J. (1998). New dimensions in local enterprise cooperation and development: From clusters to industrial districts. W: UNCTAD. *New approaches to science and technology cooperation and capacity building*. New York, Geneva: United Nations.

Kumar, N., Stern, L. W., & Anderson, J. C. (1993). Conducting inter-organizational research using key informants. *Academy of Management Journal*, *36*(6), 1633–1651.

Li, M., Haoyi, H., & Wenbin, S. (2008). Learning levels of collective learning mechanism in industrial cluster. *International Journal of Human Resources Development and Management*, *8*(1/2), 43–62.

Lin, M.-J. J., Chuang, M.-Y., & Wei, K.-L. (2014). Relationships between collective learning, absorptive capacity, and innovation performance. *International Journal of Innovation and Learning*, *16*(3), 338–352.

Lis, A. M., & Lis, A. (2014). Old problems-new solutions: conversion of capitals as a tool for shaping the competitive position in the economic field. *Social Sciences*, *84*(2), 12-20.

Lis, A. M. (2018), *Współpraca w Inicjatywach Klastrowych. Rola Bliskości w Rozwoju Powiązań Kooperacyjnych* [Cooperation in Cluster Initiatives: The Role of Proximity in the Development of Cooperative Relationships], Wydawnictwo Politechniki Gdanskiej, Gdansk.

Liu, X. (2012). An empirical research on internal mechanism that inter-organization learning affected cluster growth. *IEEE*, (09), 1–6.

Lorenzen, M. (2018). The Geography of the Creative Industries: Theoretical Stocktaking and Empirical Illustration. In G. L. Clark, M. P. Feldman, M. S. Gertler, & D. Wójcik (Eds.), *The New Oxford Handbook of Economic Geography* (pp. 1–24). Oxford Handbooks Online. https://doi.org/10.1093/oxfordhb/9780198755609.013.38

For Peer Review

Maffioli, A., Pietrobelli, C., & Stucchi, R. (Eds.). (2016). *The impact evaluation of cluster development programs: methods and practices*. Inter-American Development Bank.

Malakauskaite A., Navickas V. (2011). Relation between a cluster's life cycle and competitiveness level, *Economics and Management*, 16, 214–218.

Marshall, A. (1890). *Principles of Economics*. London: 8th ed., Macmillan.

Maxwell, J. A. (2005). *Qualitative Research Design: An Interactive Approach*. Thousand Oaks, CA: Sage Publications.

Menzel, M., & Fornahl, D. (2010). Cluster life cycles — dimensions and rationales of cluster evolution. *Industrial and Corporate Change*, *19*(1), 205–238. https://doi.org/10.1093/icc/dtp036

Morgulis-Yakushev, S., & Sölvell, Ö. (2017). Enhancing dynamism in clusters: A model for evaluating cluster organizations' bridge-building activities across cluster gaps. *Competitiveness Review: An International Business Journal*, *27*(2).

Mozzato, A. R., & Bitencourt, C. C. (2014). Understanding interorganizational learning based on social spaces and learning episodes. *BAR - Brazilian Administration Review*, *11*(3), 284–301. https://doi.org/10.1590/1807-7692bar2014370

Mytelka L.K., Farinelli F. (2000) Local clusters, innovation systems and sustained competitiveness. *UNU/INTECH Discussion Papers*, No. 2005.

Nicolletti, M., Lutti, N., Souza, R., & Pagotto, L. (2019). Social and organizational learning in the adaptation to the process of climate change: The case of a Brazilian thermoplastic resins and petrochemical company. *Journal of Cleaner Production*, *226*, 748–758. https://doi.org/10.1016/j.jclepro.2019.04.058

Obadić, A. (2013). Specificities of EU cluster policies. *Journal of Enterprising Communities: People and Places in the Global Economy*, *7*(1), 23–35. https://doi.org/10.1108/17506201311315581

Parrilli, M. D., Aranguren, M. J., & Larrea, M. (2010). The role of interactive learning to close the "Innovation Gap " in SME-Based Local Economies : A furniture cluster in the Basque country and its key policy implications. *European Planning Studies*, (December 2014), 37–41. https://doi.org/10.1080/09654310903497660

Perez-Aleman, P. (2011). Collective learning in global diffusion: Spreading quality standards in a developing country cluster. *Organization Science*, *22*(1), 173–189. https://doi.org/10.1287/orsc.1090.0514

Peirce C.S. (1931, 1958). *Collected works*. Cambridge, MA: Harvard University Press.

Porter, M. E. (1998). Clusters and the new economics of competition. *Harvard Business Review* 76(6), 77–90.

Porter, M. (1990). *The Competitive Advantage of Nations*. New York: Free Press.

Porter, M. (2000). Location, competition, and economic development: Local clusters in a global economy. *Economic Development Quarterly*, *14*, 15–34.

Porter, M. E. (2008). *On competition*. Harvard Business Press.

Porter, M., & Ketels, C. H. M. (2009). Clusters and industrial districts: Common roots, different perspectives. In Giacomo Becattini, M. Bellandi, & L. De Propris (Eds.), *A Handbook of Industrial Districts* (pp. 172–186). Cheltenham, UK, Northhampton, MA, USA: Edward Elgar Publisher.

Pouder R., John C.H.S. (1996). Hot spots and blind spots: Geographical clusters of firms and innovation. *Academy of Management Review*, 21(4), 1192–1225.

Richardson, C. (2013). Knowledge-sharing through social interaction in a policy-driven industrial cluster. *Journal of Engineering and Public Policy*, *2*(2), 160–177. https://doi.org/10.1108/JEPP-08-2011-0010

Richardson, C., Yamin, M., & Sinkovics, R. R. (2012). Policy-driven clusters, interfirm interactions and firm internationalisation: Some insights from Malaysia' s Multimedia Super Corridor. *International Business Review*, *21*(5), 794–805. https://doi.org/10.1016/j.ibusrev.2011.09.002

Competitiveness Review

Rogge, N., Theesfeld, I., & Strassner, C. (2020). The potential of social learning in community gardens and the impact of community heterogeneity. *Learning, Culture and Social Interaction*, *24*(March 2019), 100351. https://doi.org/10.1016/j.lcsi.2019.100351

Rosenfeld S.A. (1997). Bringing business clusters into the mainstream of economic development. *European Planning Studies*, 5(1), 3–23.

Rosenfeld S.A. (2002). *Creating Smart Systems: A guide to cluster strategies in less favoured regions*. Carrboro, North Carolina: Regional Technology Strategies.

Sforzi F. (2002). The industrial district and the "new" Italian economic geography. *European Planning Studies*, 10(4), 439–447.

Sölvell, Ö., Lindqvist, G., & Ketels, C. (2003). *The Cluster Initiative Greenbook*. Stockholm: Ivory Tower.

Sölvell, Örjan. (2008). *Clusters. Balancing Evolutionary and Constructive Forces*. Stockholm: Ivory Tower Publishers.

Staber, U. (2009). Collective learning in clusters Mechanisms and biases. *Entrepreneurship & Regional Development*, *21*(Septmeber-November), 553–573. https://doi.org/10.1080/08985620802529526

Svetina, A. C., & Jaklic, M. (2008). Collective learning channels in clusters. *Economic and Business Review for Central and South - Eastern Europe*, *10*(4), 289–306.

Swann P., Prevezer M. (1996). A comparison of the dynamics of industrial clustering in computing and biotechnology. *Research Policy*, 25(7), 1139–1157.

Ter Wal, A. L. J. (2013). Cluster emergence and network evolution: A longitudinal analysis of the inventor network in Sophia-Antipolis. *Regional Studies*, *47*(5), 651–668.

Turner, S. (2010). Networks of learning within the English wine industry. *Journal of Economic Geography*, *10*, 685–715.

Upadhyayula, R. S., Dhandapani, K., & Karna, A. (2017). The role of cluster presence and quality certification in internationalization and performance of Offshore Service Providers. *Journal of International Management*, *23*(1), 72–86. https://doi.org/10.1016/j.intman.2016.11.004

Wang, L., & Helms, W. S. (2019). Tapping into agglomeration benefits by engaging in a community of practice. *Strategic Organization*, 1–28. https://doi.org/10.1177/1476127019852726

Wenger, E. (1998). *Communities of Practice: Learning, Meaning, and Identity*. Cambridge, MA: Harvard University Press.

Wenger, E. (2009). A social theory of learning. In I. Knud (Ed.), *Contemporary Theories of Learning. Learning theorists … in their own words* (pp. 209–218). New York: Routledge, Taylor & Francis Group.

Wenger, E. (2010). Communities of practice and social learning systems: The career of a concept. In C. Blackmore (Ed.), *Social Learning Systems and Communities of Practice* (pp. 179–198). London: Springer-Verlag London. https://doi.org/doi: 10.1177/135050840072002

Competitiveness Review

Table 1. Scopus bibliometric analysis (February 2, 2019)

Search criteria	**"cluster" and "learning"**	**"cluster initiative" and "learning"**
Title/abstract/keywords	24,018	7
Subject area: Business, Management and Accounting	846	1
Subject area: Economics, Econometrics and Finance	262	1
Subject area: Social Sciences	2,868	5
Search criteria	**"cluster" and "collective learning"**	**"cluster initiative" and "collective learning"**
Title/abstract/keywords	56	1
Subject area: Business, Management and Accounting	20	0
Subject area: Economics, Econometrics and Finance	14	0
Subject area: Social Sciences	29	1
Search criteria	**"cluster" and "social learning"**	**"cluster initiative" and "social learning"**
Title/abstract/keywords	98	0
Subject area: Business, Management and Accounting	9	0
Subject area: Economics, Econometrics and Finance	7	0
Subject area: Social Sciences	31	0

Competitiveness Review

Table 2. The sample characteristics

Cluster initiative name	Creation date	Number of cluster members	Scope	Type of cluster initiative	Number of interviews
Metal Cluster A	2008	35	regional	bottom-up	11 (2C, 4E, 4R&D+, 1B)
Metal Cluster B	2009	78	regional	mixed form	7 (2C, 5E)
ICT Cluster A	2007	200	regional	mixed form	6 (1C, 4E, 1R&D+)
ICT Cluster B	2009	130	regional	mixed form	11 (2C, 7E, 2R&D+)

Note: C (coordinator); E (enterprise), R&D (R&D institution, university, education institution); B (business environment institution)

Table 3. The axial coding

No.	Category	Peculiarities
1.	The involvement level	– Passive participation (dead souls) – Active participation (participants) – Joining for cooperation (cooperators) – Initiating cooperation (locomotives)
2.	The strength of interactions	– Anonymity – Removing the barrier of anonymity – Removing the barrier of distrust – Verification of trust
3.	Symptoms of learning	– Information transfer (recipient) – Raising awareness (recipient) – Information transfer (donor & recipient) – Raising awareness (donor & recipient) – Demonstrating (donor & recipient) – Inspiring (donor & recipient) – Motivating (donor & recipient) – Educating (donor & recipient)
4.	The type of received resources	– Access to general information – Access to detailed information – Access to knowledge – Co-creation of knowledge

Competitiveness Review

Table 4. The selective coding

Category 1. The involvement level	Category 2. The strength of interactions	Category 3. The ways that learning occurs	Category 4. The type of benefits
Passive participation	Anonymity	Information transfer (recipient) Raising awareness (recipient)	Access to general information
Active participation	Removing the barrier of anonymity	Information transfer (donor & recipient) Raising awareness (donor & recipient)	Access to detailed information
Joining for cooperation	Removing the barrier of distrust	Demonstrating (donor & recipient) Inspiring (donor & recipient)	Access to knowledge
Initiating cooperation	Verification of trust	Motivating (donor & recipient) Educating (donor & recipient)	Co-creation of knowledge

Competitiveness Review

Table 5. The involvement level and the strength of interactions - illustrative quotations

Category 1. The involvement level	Category 2. The strength of interactions	Selected quotations
Passive participation	Anonymity	"To have access to information in a cluster, it is not necessary to establish relationships with others from the cluster. The Internet is enough for that." (B2) "80 companies are 'dead souls'; they pay the fee, but they do not take advantage of it, in other words, they simply have a gym pass. They buy tickets and are happy to have them, but nothing more [...]. They are completely 'dead'; there is no contact with them, only their payment of membership fees." (D3)
Active participation	Removing the barrier of anonymity	"I am a relational man and I decided that a cluster is the best way to make contacts." (A6) "At the beginning, everyone looked at one another with such distrust. There was resistance because, theoretically, companies in the metal industry compete with one another. But then relationships developed. [...] We got to know each other better." (A5)
Joining for cooperation	Removing the barrier of distrust	"The cluster members begin to meet, talk, discuss and develop their relationships. A certain scope of trust is created, a very underestimated one." (D1) "Finding a subcontractor is quite simple because it can be done without a cluster. But the search for a partner for cooperation may already be difficult because you have to trust the other side." (D7)
Initiating cooperation	Verification of trust	"It is understandable from the point of view of a project member or project leader that one wants to recommend companies about which one is confident because s/he has already cooperated with these companies and this has succeeded." (D5) "We like one another and we trust one another because we have completed one project together. We have one or two partners, and now the third one 'is born', with whom we are able to cooperate.." (D9)

Note: A, B, C, D refers to clusters A, B, C, D, respectively, while 1, 2…n denotes a particular interviewee

Competitiveness Review

Table 6. The ways that social learning occurs in the cluster initiatives

Category 1/ Category 2	Category 3. Symptoms of learning	Selected citations	Category 4. The type of benefits	Selected quotations
Passive participation/ Anonymity	Information transfer (recipient) Raising awareness (recipient)	"In a cluster, a coordinator or animator is a very important person. A man who can collect information to know which project or program will have effects. And if he knows that a company can take advantage of these effects, he will make them available to the cluster." (D3) "When information sent in the cluster reveals the creation of some software and someone in the cluster is surprised that this is nothing but an innovation. Although s/he already owns something similar, this very information makes him/her realize that." (C6)	Access to general information	"Sometimes, it's great in a larger group. There is always some information about what's going on in the world. This is about what knowledge we get in the cluster – that's knowledge that does not require a deeper analysis." (D5)
Active participation/ Removing the barrier of anonymity	Information transfer (donor & recipient) Raising awareness (donor & recipient)	"I assume that if there is a conference, discussion, meeting, and we also exchange some views there, it gives a lot. There must be information flow in the cluster, even such meetings for gossip - it also brings us to act, or indicates the directions which we can follow together." (B10) "If someone is aware of something... For example, the average person knows only that 'someone' takes part in EU projects. And you can tell him: listen, you can also apply, you can learn a language for free, you can have a trip. And he says: oh, am I also able to do it?" (C6)	Access to detailed information	"To supplement and expand my capacity, I got to know the local market intensively and, among other things, the cluster allowed me to do so. And now I know exactly what machines other companies have and I can take advantage of it because we know one another well." (A6)
Joining for cooperation/ Removing the barrier of distrust	Demonstrating (donor & recipient) Inspiring (donor & recipient)	"I did something with graphene, and in the cluster we have one member who works in the automotive industry. I told him that he could also use graphene and he could do something with it." (A4) "The cluster stimulates, accelerates and inspires us. We have a strategy and we should go in this direction for sure. But if we did not join certain projects all this would take longer, it would take - not 2, but for example, 5 years longer." (D5)	Access to knowledge	"To have general information - you come to meetings, you observe. To get detailed information - you participate in working groups, you build trust. Market opportunities appear later - you look at those working groups and projects that are discussed and you see in which direction ICT is developing, you catch the trends and problems. And the next level is knowledge, which appears in projects." (D1)
Initiating cooperation/ Verification of trust	Motivating (donor & recipient) Educating (donor & recipient)	"What's happening in our company ... it is impossible to do so much in the normal world. If something is to be done and at an unrealistic pace - it is definitely in our company... The others in the cluster know about it. We told them about it, we showed, explained and encouraged them." (B8) "In order to stimulate the participants' thinking, it is necessary to set the whole program very precisely – how to educate, how to teach them, how to run meetings, show cases of success, make everyone think: 'what can I do?'. We try to make the companies have ideas." (D9)	Co-creation of knowledge	"Knowledge arises in projects. Some of the documents are open to everyone, and some are only for the people who carried out these projects." (D5)

Note: A, B, C, D refers to clusters A, B, C, D, respectively, while 1, 2…n denotes a particular interviewee

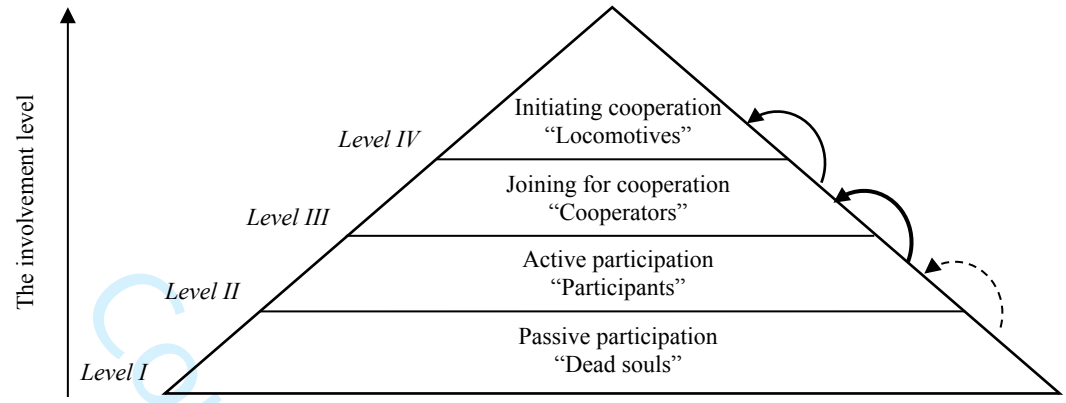
For Peer Review

Table 7. Communities of practice and practices

Communities of practice	Examples of practices	Description
Participants	Attending the CI meetings, enabling contacts in meetings, encouraging, enlightening, showing benefits	Many communication links, abundant information, networking opportunities, engaging in particular topics, presenting advantages for members
Cooperators	Attending working or project group meetings in the CIs, good practices	Joining the existing groups in the CIs, setting up cooperation with a particular scientist, knowledge sources, or ideas
Locomotives	Initiating and working in project groups in the CIs	Convincing others to get involved in the project groups, using and developing R&D resources

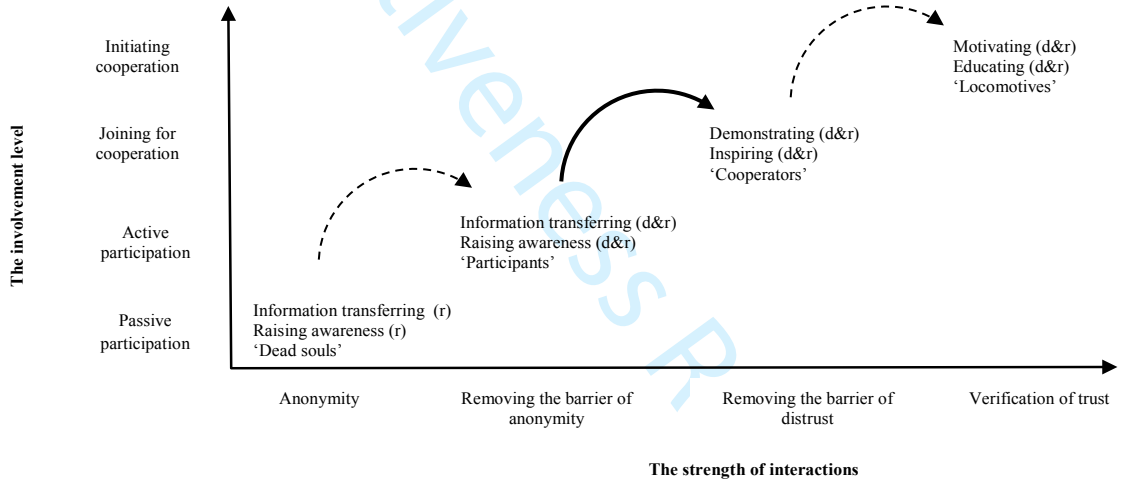
Competitiveness Review

Figure 1. The groups of members in the cluster initiatives



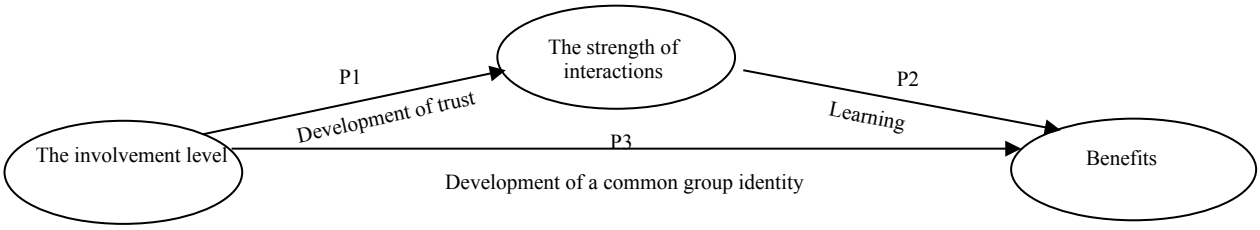
Note: levels II-IV show CoPs

Figure 2. Learning in cluster initiatives – the involvement level and the strength of interactions



Note: d – donors, r – recipient

Figure 3. The propositions for further quantitative research



Competitiveness Review