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Classification of the key competencies of cluster managers using a Delphi approach: introducing insights from the Czech Republic

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Abstract: Recent studies highlight the significance of a competent manager for the long-term development of a cluster organisation. However, the key competencies required for managers have not been adequately studied. The main objective of this study is to identify the key competencies of managers and construct a competency model. The data was gathered using the Delphi method with three rounds involving a group of experts with prior experience in management of cluster organisations. The results identified nine key competencies, to further develop an innovation-intensive ecosystem based on the managers' abilities to manage, motivate, communicate, protect, analyse, and network. The final list of competencies provide practical implications for the selection and evaluation of managers and meet their development needs as well as those of cluster organisations, with insights from the Czech Republic. Additionally, the paper sheds some light on the theoretical overview concerning the management's competencies in a collaborative environment.

Keywords: cluster; cluster organisation; cluster management; competencies; competency models; Delphi method; Czech Republic.

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1 Introduction

Recently, there has been an increasing demand for well-educated and skilled management to effectively face a rapidly changing environment. Vathanophas (2006) considered competent employees and managers as crucial assets to acquire and retain a competitive advantage. The situation in cluster environment is also similar (Sölvell et al., 2003). In order to identify clusters, we adopt Porter's (2000, p.15) definition where clusters represent 'geographic concentrations of interconnected companies, specialised suppliers, service providers, firms in related industries, and associated institutions (e.g., universities, standards agencies, trade associations) in a particular field that compete but also cooperate'. Furthermore, we take a closer look at a cluster organisation, which differs from clusters with a legal entity and a management structure. A cluster organisation can be defined as a group of interconnected stakeholders in a certain sector, with educational and research institutions localised in an area (Porter, 2000). These stakeholders share similar aims focused on collaboration on projects, mutual activities supporting knowledge sharing, while facing common challenges in achieving a competitive advantage (Žižka, 2006). Additionally, a cluster organisation provides a basis for advancing entrepreneurial environment through mutual competition and cooperation at the same time (Bliemel et al., 2019). As Sölvell and Williams (2013) believed, cluster organisations develop innovation actions that help in linking different stakeholders in regional perspective with a potential to tackle innovation gaps. There are certain implications to include cluster organisations in local innovation systems that are linking local stakeholders based on their embeddedness in networks (Gebreyesus and Mohnen, 2013).

To have professional management of clusters organisations should apply tools for its further development (Meyer and Meyer, 2017; Rekalde et al., 2017). Cluster management is responsible for developing an innovative ecosystem by linking multiple organisations

that are based on collaboration and competition (Autio and Thomas, 2014). In this case, a competency model is seen as a valuable tool for management development (Mansfield, 1996; Patterson et al., 2000; Rifkin et al., 1999). According to Salob and Greenslade (2005), who studied leadership development in 373 US companies, 100% of the top 20 companies have integrated either a set of competencies or a competency model into the management processes. However, the approach of adopting competencies within the cluster conditions differs across organisations. There is limited literature on the competencies of cluster managers. Certain scholars have suggested multiple skills, knowledge and other personal attributes that cluster managers should possess (Jarjabka and Weiner, 2012; Jungwirth and Ruckdäschel, 2013; Kircher et al., 2017; Sydow et al., 2011; Zagorsek et al., 2008). However, not all these required characteristics might be available in practice, though it creates the illusion of an ideal candidate. As it stands, it is more appropriate to work with managers' competencies including their behaviour. This study contributes to the topic of competencies among managers of cluster organisations, by providing an overview of the competency model in cluster organisations to enhance their competitiveness. Qualitative analysis provides certain implications for cluster organisations and their role in collaborative networks, which are based on joint activities on developing innovation ecosystems (Peronard and Brix, 2018). Therefore, the main objective of our paper is to identify key cluster manager competencies with their required level to raise awareness about the specifics concerning the management of cluster organisations and its role in developing competitive ecosystems. We believe this to be the first step towards professionalising the governance in cluster organisations based on empirical findings. This study's findings can have important implications for international cluster managers when adopting either competencies or competency model in the management of cluster organisation and help them in enhancing competitiveness and development of innovation ecosystems. Further, it would also provide the potential applicants with a realistic set of behaviours and skillset required for the successful and effective management of cluster organisations. We believe that this study's findings could provide insights for selecting the right individual for cluster organisation management and developing collaborative networks. Besides, this study can help in the evaluation of current competencies and accordingly design future training and educational activities. This might lead to not only the development of cluster managers, but also impact the whole organisation. Additionally, the study could contribute to the development of cluster managers in terms of their role as an employee-driven innovation in networks based on knowledge individuals (Deslée and Dahan, 2018).

Defining key competencies and the respective behaviours, is an integral part of a competency model (Horváthová et al., 2016). In order to identify the key competencies related to the examined position including their required level, we adopted Delphi approach to deliver empirical findings. The following research questions were identified:

- Which key competencies should a manager of a cluster organisation possess to achieve effective performance in the Czech Republic?
- What is the required level of the identified competencies for effective performance in the Czech Republic?

The remainder of the paper is structured as follows: Section 2 defines the competencies, competency model in management, clusters, and cluster organisations with perspectives and experiences from the Czech Republic and describes the cluster managers, Section 3

introduces the methodology employed in the study, and Section 4 focuses on the results and discussion. Finally, Section 5 presents the conclusion, limitations, and suggestions for further research on the subject.

2 Literature review

To holistically understand the term, competency, we first need to define it. Boyatzis (1982, p.20) defined competency as ‘an underlying characteristic of a person which results in an effective and/or superior performance in a job’. The most common definition of competency, which we have also adopted in our paper, is based on knowledge, skills, abilities and other characteristics (KSAO), where a competency corresponds with knowledge, skills, abilities, and other individual characteristics required for successful performance (Mirabile, 1997; Schippmann et al., 2000; Spencer et al., 1994). From a socio-psychological point of view, Hroník (2006) classified competency into three general groups: competency in solving problems (the approach to handling tasks and things), interpersonal competence (relationship with other people) and self-management competence (behaviour towards oneself and expression of emotions). In practice, the identification of relevant competencies is a crucial step that leads to the development of a competency model, which could be used by human resources management in selection and recruitment processes (Boyatzis, 1982). In addition, the competency model might be defined as a behavioural job description that should be specified for each position (Fogg, 1999). Managerial competency models are designed for both normal and above-standard performance within managerial competencies. Successful identification of managerial competencies and their subsequent transformation into the resulting behavioural description can lead to the effective usage of managerial competencies focused on human resource management in an organisation (Königová et al., 2012). Boyatzis (1982) and Spencer and Spencer (1993) discussed approaches for development and validation of the competency model. In addition, Horváthová et al. (2016) suggested eight unambiguous phases of creating a competency model that we refer to in this paper. These phases include a preliminary phase based on preparation, followed by data acquisition, analysis and taxonomy of competencies, description and creation of a particular set of competencies, conceptualisation of the competency model, identification of expectations, verification of the competency model and subsequent implementation into the HRM (Horváthová et al., 2016).

In this regard, we assume that the number and set of competencies is subject to a specific job and organisational environment. A group of seven to nine (Schippmann et al., 2000) or five to nine (Spencer and Spencer, 1993) competencies are required for a job in general and are usually applied in the competency model. Nonetheless, as Horváthová et al. (2016) argued, become proficient at the competence level correlates with work performance and it can be measured based on the established behavioural standards that can be further developed. The overall value of the competency model reflects on the whole-person assessment or a holistic approach could be employed to examine the competencies that an individual has already acquired or still needs to acquire in a given industry or occupation (Mansfield, 2005; Porvazník, 2013; Rodriguez et al., 2002). The benefits of the competency model could be summarised by using a more unified and coordinated approach for designing improvements in HRM systems, especially in job redesign, novelty recruitment process, refined organisational learning, career

management, enhancing performance, and more precise compensation systems (UNIDO, 2002).

Last but not the least, the competency model should be synchronised with specific conditions related to the examined entity. It cannot just be taken over from another organisation and then applied in respective conditions. According to the literature (Greenstein, 2012; Horňáček and Zelenková, 2014; Kauffeld, 2006, 2016; Müller-Frommeyer et al., 2017; Skorková, 2016), competency models appear in many fields such as public vs. private sector, government vs. non-government sector, national vs. international companies, and small vs. medium vs. large businesses. However, currently there is no valid competency model for managers in cluster organisations. Therefore, we have focused this empirical study on the key set of competencies required for development of a specific competency model based on the Czech perspective. It is a pioneering step in this complex issue that can also be an inspiration for researchers and managers of cluster organisations in other countries with a similar focus on the systematic development of cluster organisations.

2.1 Clusters and cluster organisations: a brief overview of the Czech Republic

This study focuses on competencies in cluster organisation environments, and this section aims to highlight the specifics of management in cluster organisations. We believe that this discussion could be useful to recognise the differences in the management of cluster organisations. The original idea of cluster theory is described in *The Principles of Economics* by English economist Alfred Marshall in 1920. It referred to industrial areas that are an effective form of constructive cooperation (Marshall, 1920). This was followed by Porter (2000) who developed the concept of spatial concentration within the formulation of theory and approach to cluster development that was introduced in the first part of the paper. This approach reflects the trend of implementing cluster organisations in public policies. Cluster organisations are incorporated in industrial policies and more importantly cluster policies in case of the Czech Republic. The Czech Republic might be a captivating case, as the first cluster organisation was established here in 2003. When we take the dynamics of cluster development into account, there was a cluster boom in 2008 (NCA, 2011). Currently, the growth of new cluster organisations has become stagnant due to the implementation of a quality over quantity approach (NCA, 2017). In 2017, the total number of cluster organisations was 59, which is a significant decrease in comparison to 2012, when there were over 80 official cluster organisations. All the current cluster organisations in the Czech Republic are potential users of the future developed competency model.

2.2 Management of cluster organisation

The effective functioning of a cluster organisation depends on the presence of the right individual at the manager's position. We followed the definition by Schretlen et al. (2011, p.8) who claimed 'Cluster manager is in charge of both organisation and coordination of the activities of a cluster organisation by a certain strategy to achieve clearly defined objectives'. This position is usually occupied by either a manager of the participating companies in the cluster organisation, a successful businessman/businesswoman in the respective sector, or a representative from academia (Zagorsek et al., 2008). As the NCA (2011) claimed, cluster management should aim to increase profitability, promote

competitiveness, ensure economic and regional stability, create an innovative environment, and highlight the professionalism of the entire cluster organisation (individual cluster members). To fulfil these aims, cluster management should create an appropriate cluster environment. This can be done by offering events and services for stakeholders in a cluster organisation (Wolf et al., 2019). These activities can be divided into the following categories: networking, human resources development and training, R&D activities, and mutual commercial and promotional activities (Cloe: Clusters Linked over Europe, 2006).

Successful management of a cluster organisation requires a competent individual to coordinate and organise stakeholders and their business activities, R&D, and educational activities. As claimed by Hantsch et al. (2013), cluster management is facing new challenges, as the requirements for a successful cluster management are changing over time. Thus, it is important to continue learning and training, which are important elements of successful cluster management (Hantsch et al., 2013). A valuable tool for successful cluster management could be reflected in a competency model (Patterson et al., 2000). However, both areas of cluster manager competencies and competency models are dealing with a lack of data. According to a study by Gebhardt and Pohlmann (2013), there are no clear definitions of cluster manager competencies and no comprehensive conception. When describing characteristics of a successful cluster manager, some scholars have used terms such as attributes (Zagorsek et al., 2008) or leadership behaviour (Jungwirth and Ruckdäschel, 2013; Sydow et al., 2011). Some studies have also focused on describing cluster management in a specific industry (Kircher et al., 2017). We briefly present the main findings of these authors to show the marginally different views on clusters and their management structure in various countries and apply above mentioned experiences in the Czech Republic. Zagorsek et al. (2008) defined 11 dimensions related to the attributes of a good cluster manager, such as forward-looking, expert, skilled manager, and credible. The other dimensions were related to a communicator, integrator, achievement-oriented, neutral, entrepreneurial, external spanner, and innovative. Jungwirth and Ruckdäschel (2013) categorised leadership behaviour into empowerment, mobilisation, and embracement. They point out the differences between cluster managers in Europe (so-called Germanic) and the Anglo-American model of cluster management. They argued that managers and their practices in Austria, Germany, and Switzerland are primarily focused on empowerment and mobilisation concerning leadership behaviour, as opposed to the Anglo-American model, where cluster managers tend to focus on activities related to embracing their members.

We acknowledged the research by Kircher et al. (2017) who described four essential characteristics for professional management of the cluster organisation in the bio-economy sector: the ability to support companies in identifying receptive markets, equal participation of all stakeholders, the capability to carefully analyse and understand the needs of stakeholders, and the ability to create a favourable conditions for collaboration with unconventional communication platforms. We assume these characteristics are good fit to highlight specifics of cluster management and its role to coordinate cluster development reflecting the experience from the Czech Republic.

To summarise the diverse views on competencies in cluster organisations, we considered the similarities and differences concerning the management of cluster organisations and characteristics of individuals who are responsible for coordinating activities between various members. This paper aims to identify competencies that are

important for managers of cluster organisations, based on empirical findings. We believe this objective might be relevant for both practitioners and academics to gain a better understanding of the management structure and its challenges in cluster organisations, given an overview on competences from the Czech perspective.

3 Methodology

The objective of our study is to identify the required job-specific competencies for effective performance of the management in cluster organisations. The Delphi method has been applied by numerous scholars for identifying competencies, followed by the development of a competency model (Birdir and Pearson, 2000; Jordan, 2012; Mason and Schwartz, 2012; Moaveni et al., 2010; Ratanopas, 2012). Generally, this method is characterised as a qualitative technique that is well suited for the research of complex issues in specific settings (Grisham, 2009). In a narrower sense, the Delphi method can also be defined as the procedure of collecting expert opinions through multiple-round survey with controlled feedback between individual rounds (Linstone and Turoff, 2002). The collected data are then analysed for topics, compiled, and subsequently presented to a panel of experts through a second round in a questionnaire form. This process is repeated until a consensus is reached within the group of experts (Linstone and Turoff, 2002). Features of the method include expert anonymity, controlled feedback, and statistical matching of expert opinions. We found this technique to be the most suitable for this study due to the following reasons:

- Management of cluster organisations and its competencies is a complex issue requiring expert judgment, and as Okoli and Pawlowski (2004) argued, the average of individual responses is limited and thus inferior to the averages produced by group decision processes
- There is a lack of empirical evidence regarding competencies or the competency model of a management in cluster organisations
- The Delphi method provides organised data for evaluation especially due to the multiple and systematic iterations, revisions, and feedback
- Jungwirth and Ruckdäschel (2013) noted the need for a qualitative approach in cluster organisations research, mainly in case of greater sensitivity to the multi-contextual nature of cluster organisations
- The selected approach will enhance the understanding (in-depth) of management in cluster organisations.

3.1 Participants: panel experts

The selection of panel experts was based on the following criteria:

- 1 the panellist has either a practical experience in managing a cluster organisation or theoretical knowledge about clusters/cluster management
- 2 the panellist has at least five years of professional experience on the topic of cluster management (either practical or theoretical).

In our empirical paper, we decided to involve members of the National Cluster Association. The association brings together cluster managers, representatives from academia, and other relevant stakeholders interested in a cluster organisation development in the Czech Republic. First, we contacted each expert individually and explained them the aim of the empirical study and the procedures and commitment required to attain results. In total, 12 experts were addressed, and eight of them agreed to participate in the qualitative research. As Hallowell and Gambatese (2009) argued, most researchers work with 8-16 panellists and thus the sufficient response rate criteria were met in our research. Regarding the experts, seven were cluster managers (practical experience) and one was from an organisation supporting cluster development (theoretical knowledge). All the experts had at least five years of professional experience with cluster management. Regarding the respondents' gender, four were male and four were females. The panel experts were known to the researchers but were kept anonymous to each other throughout the process.

3.2 Procedure

Based on a questionnaire survey among Czech cluster managers, 16 important dispositions of cluster managers were identified (Horák and Matošková, 2018). They were personal integrity, performance orientation, cluster development orientation, knowledge about clusters and possibilities of their development, knowledge of the industry in which the cluster operates, knowledge of support tools for clusters, knowledge of legislation and laws, knowledge of specialised tools and techniques in management and marketing, knowledge of performance measurement of cluster organisations, strategic thinking, creative thinking, communication and presentation skills, organisational and planning skills, ability to lead people (leadership), teamwork skills, and self-directedness.

The Delphi questionnaires for all the three rounds were created in MS Word and distributed to the participants via e-mail. This form of distribution was selected due to minimum financial costs and because the involved experts belonged to different regions. Control mechanisms were adopted to minimise bias: multiple rounds of the survey were organised and anonymity was maintained to minimise dominance in the expert panel. The first round was conducted from 1 March to 20 March 2017, and its purpose was to identify behaviours related to each disposition of managers in cluster organisations. The questionnaire in the first round of Delphi method contained 16 dispositions mentioned above. In this round, the respondents had to perform two tasks:

- describe at least two situations from the cluster manager's working life in which all the 16 dispositions occur
- for each mentioned situation, describe the behaviour that will lead to the conclusion that the cluster manager has the relevant disposition

A Thematic analysis was conducted on the responses. Thematic analysis refers to 'a method for identifying, analysing and reporting patterns (themes) within data' [Braun and Clarke, (2006), p.6]. In our case, we first removed the redundancy in statements. Afterwards, the behaviour statements were coded for competency themes (competencies 1–10) with the same thematic focus and the definitions and titles of these competencies were proposed. The coding was done by the first author of this paper using competency

dictionary, national database of professions and competencies administered by the Ministry of Labour and Social Affairs in the Czech Republic. The cluster specifics were also considered which led to the development of new competency themes. After the analysing the behaviour statements using thematic analysis, we found ten competencies required for manager of a cluster organisation. The ten competencies were first classified by the main author and then discussed during three sessions with a group of researchers involved in this paper. To avoid personal bias, majority of the researchers had to agree on the identified competencies. The outcomes from the first round are summarised in Table 1.

Table 1 Proposed competences after first round

<i>Comp. N.</i>	<i>Competence classification as an ability to/to be</i>	<i>N. of statements</i>
1	Communicate, network	9
2	A visionary, strategise, a thinker	21
3	Innovate	9
4	A vendor, a representative	13
5	Protect, a methodist	10
6	An expert, a practitioner, a specialist	22
7	An analyst	7
8	A team player	8
9	A leader, a manager	26
10	An organiser	4

Source: Own processing according to the study

Table 2 Proposed competences after second round

<i>Comp. N.</i>	<i>Competence classification as an ability to</i>	<i>N. of behaviour statements</i>
1	Communicate	8
2	A visionary, a strategist	21
3	Innovate	8
4	Promote, represent, motivate	16
5	Protect, defend, be a methodist	12
6	An expert, a specialist/cluster expert	19
7	Analyse	7
8	A team player	9
9	A leader, a manager	21
10	Organise, manage	6

Source: Own processing according to the study

The second round was conducted from 12 April to 1 May 2017 and it focused deeply on refining the included behaviour statements and competencies. In the second round, the respondents had to perform the following tasks:

- mark the title of each competence based on its appropriateness or suggest a new and better title

- comment on the behaviour statements, suggesting changes to the behaviour statements (rewording, deletion, shifting to other competence, adding missing behaviour statements)
- suggest possible combination or division of the listed competencies.

In this round, the participants could re-evaluate their statements after considering the responses of the other involved experts. This round provided three main findings. First, the number of behaviour statements changed for a few competencies. Some behaviour statements were rewritten, restated, or added by respondents. Second, regarding the possible titles of competencies, the experts voted for the most accurate and proposed new ones, presented in a Table 2.

It should be noted that competence 10 was proposed to be deleted by two of the experts after the second round. The third round was conducted from 22 May to 9 June 2017 and its purpose was to select the most important behaviour statements for each competency and formulate the final titles of the competencies including their required level. In the third round, the respondents were asked to:

- choose five key behaviour statements in each competence which are essential for successful performance of cluster managers
- select the final title for each competence that in their opinion matches the included behaviour statements
- select the required level for each competence on the scale of 1–5 (1: low level, 5: excellent level) for effective performance of cluster managers
- express their agreement/disagreement on deleting competence 10.

4 Results and discussion

After collection of all the responses, the final title for each competence and behaviour statement was selected based on the majority of votes by panel experts. A minimum of three votes and higher were considered. The required level for each competence was also selected according to the majority of the involved experts. Competence 10 was excluded from the final list, according to the majority of votes in the third round. The results are displayed in Appendix.

Following the socio-psychological classification of Hroník (2006), we divided our manager competencies into two general groups, competence of solving a problem (capability to strategise, innovate, be a cluster expert, analyse) and interpersonal competence (capability to motivate, communicate, protect, network). However, the third category (self-management) defined by Hroník (2006) does not appear in our study because most of the behaviours belonging to this category were related to competence 10 (organiser), which was excluded from the final list based on the decision of majority of the experts.

First, this study defines the ability to strategise as creating a clear, compelling vision and aim. Regarding this competence, the most selected behaviour was actively seeking options to make cluster more attractive for members and non-members. This competence is similar to the so-called forward-looking (envisioning), defined by Zagorsek et al.

(2008) in their study about Slovenia clusters. Additionally, the ability to attract resources and funds to achieve strategic cluster development is important for the Anglo-American cluster organisations managers (Jungwirth and Ruckdäschel, 2013). It seems that there is a consensus between cluster managers across countries on the importance of formulating visions and strategies to achieve a common goal.

Second, we recognised the competence of the manager as governing activities of cluster organisation members and utilising their potential for cluster development. In this competence, the composing teams optimally concerning expertise and the ability to work in teams were found to be the most important. Also, it is important to know the strengths and weakness of co-workers to create effective teams based on collaborative networks. Similarly, Jungwirth and Ruckdäschel (2013) spoke about mobilising activities that are preferred by Germanic European cluster managers. The behaviours related to organising, coordinating, and governing activities are the third most important in Slovenia (Zagorsek et al., 2008).

The third competence that is examined is the ability to motivate. We describe it mainly as the ability to promote the idea of clustering and motivating others. In case of this competence, two behaviours were found to be equally important, promoting clusters (via interviews/PR) and motivating cluster members to engage in development activities related to trust building. The experts believed that cluster managers should be able to inspire other members for joint activities and successfully attract new members. The ability to motivate others and encourage stakeholder involvement despite differences in their commitment was likewise mentioned by Zagorsek et al. (2008) and Jungwirth and Ruckdäschel (2013).

The second category consists of competencies needed on a high level, such as the ability to: communicate, innovate, protect, be a cluster expert, analyse, and network. This competence involves the ability to communicate one's thoughts clearly in verbal or written form and to actively listen to others' needs. In case of communication, the most selected feature is having a natural confidence, based on self-acknowledgement and feeling of the importance of one's role as a manager, which provides the authority for taking actions. Zagorsek et al. (2008) defined the attribute to communicate as the ability to communicate effectively with internal/external stakeholders and put it on the fifth place. Similarly, the need for active communication is also mentioned by Kircher et al. (2017) who suggested providing topic-oriented communication platforms as one of the most important aspects leading to professional management in cluster organisations.

The next competence is based on the ability to innovate, implement new methods, and to actively seek new and unconventional solutions within an innovative ecosystem. The most frequent behaviours were related to generating ideas to overcome existing challenges with cluster members, proposing, and promoting changes. Zagorsek et al. (2008) also mentioned about innovativeness and defined it as the ability to come up with new ideas and approaches. However, this one was identified as the least important in their study of cluster organisations in Slovenia. On the contrary, Jungwirth and Ruckdäschel (2013) discussed that developing new visions, ideas, and goals is an essential part of successfully managing cluster organisations from the Anglo-American point of view.

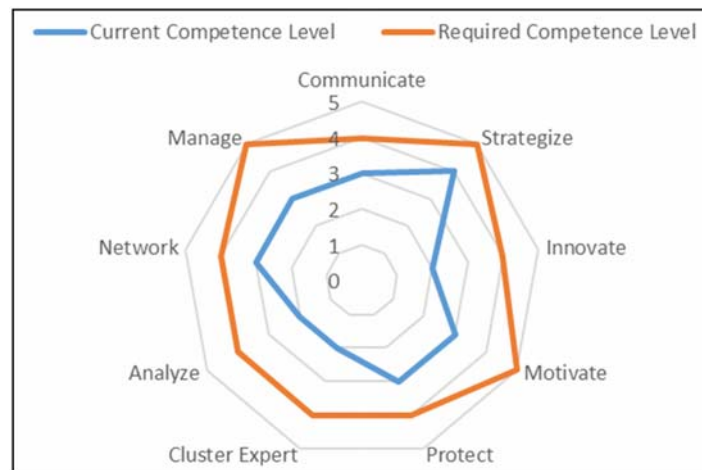
The ability to protect refers to defending the interests of the cluster as a collaborative network and ensuring maintenance of legal provisions, ethical regulations, and integrity among members. Furthermore, this ability reflects on two specific behaviours: act equally with all cluster members regardless of their size or power in the cluster and appear highly trustworthy and also serve as an integral part of trust building in terms of social capital in

the cluster. These behaviours were also highlighted by Zagorsek et al. (2008) within the attributes, neutral and credible, specifically as the ability to behave without preferences towards certain members and be honest and trustworthy. In this context, Jungwirth and Ruckdäschel (2013) suggested that the cluster manager should behave as the keeper of rules for the maintenance of viable infrastructure.

The manager can be considered as a cluster expert when he/she is a professional in the respective field, knows about opportunities for cluster development, and studies current trends. In terms of developing competencies, cluster experts and their behaviours are related to orientation in cluster specialisation, grant programs and studying new materials and trends in cluster management, which had the equal highest score. Furthermore, Zagorsek et al. (2008) claimed that knowing the industry and technology is the second most important element among Slovenian clusters.

The competence concerning the ability to analyse, reflects on the capability to process information, analyse them, and to apply critical thinking with relevant information. All the experts suggested that the most important feature is to be capable of identifying the best practices regarding foreign clusters and applying them in their respective environment. Nevertheless, cluster managers should not only blindly copy a practice from abroad, but also be able to apply appropriate measures according to the specifics and conditions of their country. The importance of the ability to carefully analyse the members' demands and requirements is also supported by Kircher et al. (2017).

Figure 1 Identified competencies as abilities with their required level (see online version for colours)



Source: Own processing according to the study, 2018

This empirical study identified the ability to network, which is based on the competence to effectively collaborate with different stakeholders in the cluster organisation. Experts in this regard awarded the most votes to sharing knowledge and skills with cluster members (providing professional and useful information and advice). For the cluster manager, ensuring active co-operation with other members and making them more involved in cluster interests is an important factor for the development of the whole organisation. Similarly, Jungwirth and Ruckdäschel (2013) claimed that maintaining a

close-knit network is crucial, especially in Germanic European clusters. Additionally, Kircher et al. (2017) pointed out the positive impact of sharing experiences and ideas with other members and creating a culture and climate of cooperation.

In summary, our final list consists of nine specific competencies for managers in cluster organisations (these competencies with their required level for effective performance are shown in Figure 1). However, the question regarding why the experts selected competencies to strategise, lead, and motivate is crucial. This might be answered by the specific conditions in cluster environment. As Zagorsek et al. (2008) suggested, the management of a cluster organisation differs with that of a traditional organisation, because of the lack of formal authority and power, a high diversity of cluster members, and low level of trust and commitment among the members. Thus, the manager should be able to inspire and motivate others, promote the idea of clustering, excite members for joint activities, and formulate a common vision (Zagorsek et al., 2008). In our findings, these behaviours belong to the three competencies that are needed on an excellent level.

5 Conclusions

Qualified and skilled workers are needed for an organisation to meet both its current and future needs. The main aim of this study is to identify key competencies for a manager in cluster organisations and to develop a competency model based on insights and experiences from the Czech Republic. The three-round Delphi method involving an expert panel of 8 members was applied. Our suggested competency model of manager in cluster organisations consists of nine key competencies, where 3 competencies (ability strategise, manage, motivate) should be developed on an excellent level and six competencies (ability to communicate, protect, being cluster expert, innovate, analyse, network) are needed on a high level for an effective performance at the said position. The findings are comparable to studies examining the main attributes of managers in cluster organisations in Slovenia (Zagorsek et al., 2008), Anglo-American countries (Jungwirth and Ruckdäschel, 2013), and in Germany and Austria (Kircher et al., 2017). Overall, our empirical study contributes to further development of the competency model for effective management structures in cluster organisations. Additionally, this study could lead to the professionalisation of cluster management, which could be a decisive moment in cluster organisations development. The presented results provide an insight into the specifics of international cluster managers for adopting either competencies or the competency model in the management of cluster organisation.

The set of key competencies developed in our study can have several implications for managers, policymakers, and lecturers. The final list of competencies including behaviours (Appendix) has practical implications concerning the evaluation of current or selection of new cluster managers and their role for coordination of various stakeholders. Specifically, we assume that this process should be divided into three stages, individual evaluation of behaviours on a scale of 1 (low)–5 (excellent) for each of the identified competencies, calculation of average and comparison with the required competence level, and assessment of the development needs. Based on these findings, cluster management might be able to identify challenges and needs regarding the development of cluster organisations. As Hantsch et al. (2013) argued, investing in the knowledge and managerial skills of cluster management should then be repaid through better service and tailored support for stakeholders in cluster organisations. Furthermore, based on our

empirical findings, cluster organisations can develop a favourable environment to increase work performance and satisfaction of cluster organisations' managers. The identified competencies might contribute to an overview of the management structure in cluster organisations for potential applicants by providing a realistic job preview of the skills required for the position of a cluster manager. Additionally, we believe that this study provides certain implications for educators, as the identified competencies could be employed to design a competency-based curriculum, develop training programs, and step towards measuring behaviour competencies.

However, certain limitations of our study should be kept in mind when considering the findings. Our Delphi panel included experts with knowledge and expertise from the Czech Republic. If the panel expert were international, the results could differ in socioeconomic and cultural background and experiences with the development of cluster organisations. Some scholars could also find the number of experts involved in the paper questionable. However, the total number of experts in our paper meets the recommendations made by other scholars (Hallowell and Gambatese, 2009; Mason and Schwartz, 2012).

Further research should focus on evaluating the competencies of current cluster managers and comparing their results with the suggested model. We assume that the identified gaps could be employed to design training and development activities. Future studies could also focus on an examination of the opinions of cluster managers across Europe. Specifically, the emphasis could be given to cluster managers from Visegrad group due to the socio-economic similarities. The opinions on the identified competencies and their required level can differ across countries. Thus, it is important to discuss the identified competencies within an international sample.

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Appendix

Table 3 Key competencies of Czech cluster manager

<i>Name of competence – ability to</i>	<i>Definition of competence</i>	<i>Behaviour</i>	<i>Required competence level</i>
Communicate	Cluster manager communicates thoughts clearly in verbal or written form, is capable of communication on various subjects in at least one global language, and actively listens to others' needs.	<p>Presents the professional skills of cluster members clearly and on a high level.</p> <p>Is capable of presentation to the public in at least two languages – Czech/Slovak and English.</p> <p>Is capable of clear verbal/written communication with cluster members and external institutions (ministries, agencies, etc.).</p> <p>Is open to network new contacts.</p> <p>Communicates with cluster members regularly, likewise on personal meetings.</p> <p>Communicates with other clusters in Czech Republic and the European Union.</p> <p>Has a natural confidence, based on self-acknowledgment as a coordinator, which provides the authority in meetings with cluster representatives, representatives of agencies, ministries and potential cluster members.</p>	4
Strategise	Cluster manager formulates clear and compelling vision and aims, possesses strategic thinking to achieve the specified vision.	<p>Plans cluster development – plans appropriate human and financial capacities to support teams in achieving specified objectives.</p> <p>Defines activities aimed at fulfilling long-term objectives (looks further and plans activities ahead).</p> <p>Strives for the optimal use of knowledge and skills of cluster members.</p> <p>Seeks optimal financial resources to implement joint projects.</p> <p>Actively seeks options to make cluster more attractive for members and non-members (seeks topics and areas for cooperation, looks for feedback and usefulness of the said activities).</p> <p>Creates a cluster strategy that is real, efficient, and comprehensible.</p> <p>Defines a vision and objectives for the future that are discussed with statutory authorities. The vision and objectives are then approved by cluster members.</p>	5
Innovate	Cluster manager creates and implement new methods and procedures, responds flexibly, seeks new and unconventional solutions.	<p>Proposes, promotes, and processes changes.</p> <p>Generates ideas in response to existing challenges with cluster members.</p> <p>Reacts to innovation needs of the society in the field.</p> <p>Acknowledges innovativeness in the cluster industry.</p>	4
Motivate	Cluster manager promotes cluster, approaches new members with the idea of clustering, successfully convinces representatives of public administration about importance of cluster development, motivates companies to cooperate on cluster formation and following joint projects.	<p>Seeks and applies innovative methods of cluster development.</p> <p>Promotes cluster and raises awareness about cluster brand (via interviews/PR).</p> <p>Attempts to influence the thinking of various representatives (agencies, ministries, and other institutions in respective field).</p> <p>Presents cluster and its benefits to the public to attract new members.</p> <p>Motivates and attracts new candidates for cluster membership.</p> <p>Encourages and motivates cluster members to cooperate and engage in joint activities related to specific needs and further development.</p> <p>Utilises professional conferences, seminars (regional and national) in addition to standard opportunities for promotion.</p> <p>Motivates cluster members to engage in development activities related to building trust and promoting creativity in finding new opportunities.</p>	5

Table 3 Key competencies of Czech cluster manager (continued)

Name of competence – ability to	Definition of competence	Behaviour	Required competence level
Protect	Cluster manager protects the interests of cluster, ensures legal provisions, ethical regulations, and justice.	Treats all cluster members equally regardless of their size or power in the cluster. Leads the team according to regulations, not only with ideas. Creates a cluster's strategy according to laws. Complies with law, regulations, and social norms (behaves the way employees and members are expected to behave). Remains neutral in decision making, with respect to consensus. Appears highly trustworthy and serves as an integral part of trust building in terms of social capital in cluster. Defends the cluster's interests in front of the decision-making authorities and the public. Assists cluster members in problem solving (members can request assistance).	4
Being a cluster expert	Cluster manager is a professional in the respective field, finds one's bearings in cluster issues and opportunities for cluster development, constantly educates in all these areas and aims for better self.	Orientates in cluster's specialisation and follows the development and direction of the cluster industry (identifies experts and leaders in the field of cluster). Orientates in grant programs related to clusters (calls for proposals, conditions, methods of cluster evaluations) and can address questions regarding grant programs. Fulfills the main idea of clusters in practice (connects public and private sectors along with academia). Educates oneself in the cluster related issues (studies new materials and trends in cluster management). Implements new topics in all activities (education/human resources development, R&D and innovation, marketing, networking/joint business activities, internationalisation).	4
Analyse	Cluster manager is capable of process analysis, encompassing critical thinking with the choice of relevant information.	Can analyse the situation the cluster is in, based on the professional/economic/social/environmental views. Performs cluster monitoring based on the data gathered by cluster members, and on domestic and national benchmarking. Reacts to external stimulus for improvement of cluster and development of executives' team competencies. Is capable of best practices identification regarding foreign clusters and applies them in own cluster.	4
Network	Cluster manager cooperates with cluster members, shares knowledge and skills with other members.	Ensures quality in project proposals development based on consensus in the cluster. Shares knowledge and skills with cluster members (provides professional and useful information and advice). Operates like a team member. Acts independently (does not wait for orders). Actively participates in problem solving.	4
Manage	Cluster manager governs activities of cluster members and utilises their potential for cluster development.	Delivers outputs on time (prepares project ahead of deadline). Creates a positive atmosphere in the team. Manages and coordinates project teams. Manages seminars, general meetings, members' meetings, working groups, strategic meetings, etc. Proposes plans and projects and implements them following their approval by stakeholders. *Listens to opinions and needs of cluster members and takes them into account during decision-making. Composes teams optimally by focusing on the members' expertise and ability to work in teams, governs the activities of working groups. Strives for maximal utilisation of synergies between cluster members.	5

Figure 2 Identified competencies as abilities with their required level (see online version for colours)



Source: Own processing according to the study, 2018