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Impact of Conscious Change Management on the Quality of Cluster Management

Abstract: The article analyzes the role of change management in efficient functioning of the organization and points to the need of using the new approach of change management in clusters. In order to prove this need, available literature and practical knowledge were reviewed for the presence of the concept and examples of its use in change management in clusters. The main aim of the article is to show that the clusters stop being a group of economic entities uniting to realize only a single project, but more often they become a group of aware cooperators coordinating their actions in a long-term perspective. This way they achieve much higher level of efficiency and development than single entities.

Keywords: change management, cluster, cluster manager, cluster management

JEL: D23, L16, L22, M21

1. Introduction

Each organization faces many challenges that involve changes in a variety of ranges and areas no matter the scale, pace of development, and industry. Some of the changes force the organization to make fundamental transformations in the business model, to rebuild the strategy or its components, to remodel processes or to transform its structures (Bielewicz, Bartusiak, 2011/2012).

Business clusters represent a specific form of cooperation which is flexible, concentrated and complementary. It is a kind of network organization that attracts entities which work together and compete on a case by case basis. Clusters are a place for knowledge and new processes creation that increase their adaptability (Buczyńska et al., 2016a). In Poland, networked cooperation is still in the early stages of development. The oldest clusters are already over 13 years old, but most of them (over 60%) are young organizations that were created in 2011–2015 (PAED, 2016). The functioning of clusters in Poland is constantly changing. The main reason for that is the continuous development of their activities and the emergence of new support areas. Often, changes are forced by the policy of state, which is aimed at raising the level of Polish economy's innovation.

The level of cluster development in Poland varies. With their development, there is a growing need to improve the quality of cluster management processes, including change management. Benchmarks of Polish and international clusters point to this. Clusters are perceived as “locomotives” of the economic development of regions and countries, and therefore extensive and up to date knowledge about them is needed, in particular in the field of broadly understood cluster support, regardless of whether the cluster has reached the level of maturity, is still developing or is a newly created unit (Plawgo, 2014; Ministerstwo Gospodarki, 2012). The characteristics of cluster structures can be an important factor strengthening the Polish economy, so it is necessary to learn about specific mechanisms that can contribute to better use of clusters in enhancing innovation and competitiveness of enterprises and regions (Plawgo, 2014).

Hence the purpose of the article is:

- Main Goal: *Assessment of domestic and foreign practices in cluster change management.*
- In order to achieve this main objective a study that included the following specific objectives was developed and conducted:
- *Goal 1: Analysis of change management activities in selected domestic and foreign clusters;*
- *Goal 2: Identifying the relationship between cluster quality and knowledge management in change management;*
- *Goal 3: Analysis of cluster management standards;*
- *Goal 4: Analysis of the content of Polish and foreign cluster benchmarks.*

The results of the study conducted in the light of the above objectives form the contents of this article.

2. Theoretical perspective of cluster management

In the literature of the subject, one can find numerous definitions of clusters, which are related to different aspects of the functioning of an organization. The prototype of cluster resulted from the concept of industrial districts (Marshall, 1947). Based on the observations made by the cluster of companies from the same industry in the same area, A. Marshall noticed the role of relations between companies, including: equal footing of various services and benefits of cooperation. He observed that collaboration contributed to faster and broader spread of innovative solutions, accelerating collective learning process, which in turn influenced the quality of work. In his description of the concept of industrial districts, A. Marshall used the notion of external benefits and referred them to agglomerations of cooperating and competing companies within the same sector. Apart from economic aspects, the theory of districts draws attention to the importance of social and anthropological factors (Markusen, 1999). It also points out many factors that determine the location of the industry. The main factors are physical conditions such as climate, soil, the presence of minerals and easy land or water transport and the “courtroom care” that today is to be interpreted as the ability to draw attention of policymakers to the socio-economic situation of the industry, enterprise or region (Marshall, 1947).

One of the first definitions of clusters was formulated by M.E. Porter, claiming that they “are geographical aggregates of interrelated companies, specialized suppliers, service providers, related companies and related institutions in the various competing but collaborating fields” (Porter, 2011: 17). Porter’s theory of clusters (economic clusters) consists of several assumptions (Grosset, 2002):

- 1) within the cluster, classical factors (resulting from the theory of production factors) are considered, such as capital, labor force, and technical and communication infrastructure;
- 2) cluster development contributes to the growth of demand in the regional market, but also gives impetus to exports and competition in supra-regional and international markets;
- 3) in the area of the cluster, there are related sectors, which support the cooperation network in this area;
- 4) the economic strategy (development strategy) of the individual enterprises forming the structure should be identical with the conditions of global competition and correspond to the economic structure of the region.

A similar definition of cluster is presented in the OECD¹ documents, where cluster is defined as a sectoral and geographical cluster of companies that benefit

¹ OECD is an intergovernmental economic organisation with 35 member countries, founded in 1960 to stimulate economic progress and world trade. It is a forum of countries describing themselves as committed to democracy and the market economy.

from the agglomeration, by linking with specialized suppliers, by access to raw materials and components, and the local labor market. These companies are actively supported by a network of public and private institutions that promote collective learning and processes of innovation diffusion (Hauknes, 1999).

The analysis also includes the methodology of change management, which becomes a complex and increasingly popular topic of research and scientific discussion, due to the increasing dynamics of the environment (Stankiewicz, 2008). Managers (especially cluster managers) aim to optimize the processes that take place within the framework of their companies' structures, and in particular extended network structures (Cieślak, 2015). It is related to intensification of global phenomena, progressive shortening of the period of commercialization of ideas and the life cycle of most products, increase of aggressiveness of competition and chronic crises in the world economy. This complexity and dynamics are supported by the proposals for modern methods, approaches and management tools, which are also useful in the area of efficient and effective response to change (Palucha, 2013). Only adjusting the range and pace of changes, and going through them step by step allows success. *A fortiori*, the organizational changes we are currently dealing with are increasingly overwhelming in their size and abundance. They are progressing at an accelerated pace and entail changes in both organizations and people, their skills, mentality, attitudes and qualifications.

Change management is to do with every significant modification of some part of the enterprise. A change concerns many aspects of the functioning of an enterprise and its environment and it can lead to results falling outside the area of change (Griffin, 2000). Change management is a structured approach to transitioning individuals, teams, and organizations from the current state to the desired future state (Sacheva, 2009).

Change management is part of the functioning of organizations, including network organizations (clusters). These are dynamic organizations where the change management process should take place at each stage of the cluster's life cycle. "Instead of achieving excellence in one area, companies must learn to be successful in new areas. Only the companies that read signals of upcoming changes and take appropriate action are successful in this" (Reevens, Deimler, 2012/2013: 40). Similar conclusions are provided by the cluster benchmark analysis conducted by the European Cluster Analysis Secretary in Berlin and the Cluster Management Standards developed by the Polish Agency for Enterprise Development (PAED)².

An indispensable element of the functioning of clusters is the continuous improvement of the quality of their management. For this purpose, the ECEI (Euro-

2 PAED is an organization with the most experience, that researches clusters in Poland in a systematic and continuous way. Each study conducted by agencies is carried out in accordance with the research standards. The quoted reports contain the purpose, scope and research methodology.

pean Cluster Excellence Initiative) together with the 13 most experienced organizations supporting the development and management of clusters have prepared an assessment system based on benchmarking research. Clusters wanting to improve the quality of management may start benchmarking with the best clusters in Europe and this way, assess the current level of management and receive support related to improving its quality³ (ESCA) (Cluster-Analysis, 2016). They are awarded on a benchmark basis for the best clusters in a given class as well as for European and non-European clusters. The certificate is a form of distinction for the best clusters, it is meant to motivate competition, and contribute to an increased interest in a cluster of potential partners. The certification system is recognized throughout Europe. There are 31 parameters taken into consideration such as: organizational structure, intra-organization cooperation, services provided, ways of financing the cluster and its recognition on the market (Cluster-Analysis, 2016). Based on these parameters, a brown, silver or gold label is awarded.

In the strict sense, the bronze label is not reflected in the quality of cluster management. It is awarded to clusters acceding to the assessment, which are interested in improving the quality management results in the near future. The silver label is a symbol of the quality of cluster management. This means that enterprise management changes are introduced within the cluster, but their level is not enough to meet the standards of the golden label. However, this does not mean that the company makes inappropriate changes. The value of some of the indicators to achieve the highest award requires at least a few years of the change process management. The gold label is the highest level in cluster management quality, and it means reaching the appropriate levels in the 31 assessed ratios. These include cluster management efficiency monitoring, services and activities to aid cluster management, and cluster coordinator's and management staff's competences. The highest award is given for a period of two years. After this period, to improve the label again, it is necessary to document the improvement of the indicators from the preceding assessment. This means that in order to get the gold label again, the cluster is required to demonstrate yet another improvement in management quality. If the cluster wants to maintain the level of the gold label, the process of continuous change and hence improvement of cluster management is essential throughout the organization's lifecycle. Obtaining a gold quality label for cluster management is a prestigious distinction for the organization and puts the cluster in a preferential position when raising cash or engaging with other entities. In Poland, no cluster has ever received a gold label. The silver label was awarded to 3 clusters and the bronze one to 15 clusters (Cluster-Analysis, 2016).

3 The largest organization in Europe that studies and supports the functioning and development of clusters. The developed indicators were created with the cooperation of 13 organizations from nine European countries which are most experienced in the field of cluster management.

Facing this challenge, the Polish Agency for Enterprise Development has developed cluster management standards (2014, version 2 updated 2016) as a response to the problem of poor (Piotrowski, 2014) cluster management in Poland and a lack of systematic approach to the preparation of professional coordinators who are key to the success of the cluster and for the effectiveness of public intervention. By using up-to-date knowledge of the ways and systems for assessing cluster management processes, coordinators and managers receive a tool to effectively improve their performance in this area, as well as the information needed to implement the standards. These standards should be understood as the principles defining desirable features of cluster management and their functioning, including, inter alia, best practices in Poland and abroad (Piotrowski, 2014).

3. Methodology of research

The study used methodological triangulation and two research methods: desk research and telephone interview. The desk research method was based on the analysis of specific information from selected subject areas. The material was arranged by keywords and a desk research matrix was prepared, in which the material was coded. In the case of Polish clusters, all those which received the ESCA awards were examined (data from the second quarter of 2017). European clusters were chosen at random. The research group covered the following types of entities:

- 1) Polish clusters with a bronze ESCA label – 15 entities;
- 2) Polish clusters with a silver ESCA label – 3 entities;
- 3) selected foreign clusters with a bronze ESCA label – 2 entities;
- 4) selected foreign clusters with a silver ESCA label – 2 entities;
- 5) selected foreign clusters with a golden ESCA label – 2 entities;

Particular attention was paid to aspects related to widely understood change management, both in the analysis of cluster management standards and in the content of Polish and foreign cluster benchmarks. An attempt was made to demonstrate that clustering and the processes involved in improving the quality of cluster management are inextricably linked to the conscious management of change. The following reports and publications were analyzed:

- 1) Clusters and their individuality, economic growth through clustered policies geared towards creating excellence in cluster management (Lämmer-Gamp et al., 2011);
- 2) Benchmark of clusters in Poland – General Report, 2014 edition (Plawgo, 2014);
- 3) Cluster Management Standards (Piotrowski, 2014);
- 4) Implementation of cluster management standards. Coordinator's Guide (Kępa, Kacperek, 2017),

5) Report: Verification of management standards in selected clusters – 2015 edition (Buczyńska et al., 2016b);

Four respondents were interviewed on a telephone (CATI):

- 1) cluster coordinators with silver and bronze label,
- 2) cluster coordinator without a label
- 3) specialist in cluster management methodology, working with the European Secretary for Cluster Analysis on clustering and clustering internationalization (in the European Foundation for Cluster Excellence).

The questions varied according to the respondent. Cluster coordinators were asked to:

- 1) assess their knowledge of change management,
- 2) give examples of the application of change management in the management and coordination of cluster activities,
- 3) give an opinion about whether the change management influences the management of the organization,
- 4) give an opinion about a willingness of their cluster to apply for assessment of management quality to The European Secretariat for Cluster Analysis – ESCA.

Questions addressed to the specialist were related to:

1. Whether or not Polish clusters use principles of change management?
2. Whether or not foreign clusters use principles of change management,
3. Is there a relationship between the level of your label (bronze, silver, gold) and the use of change management?

The detailed course of the research process is presented in Figure 1.

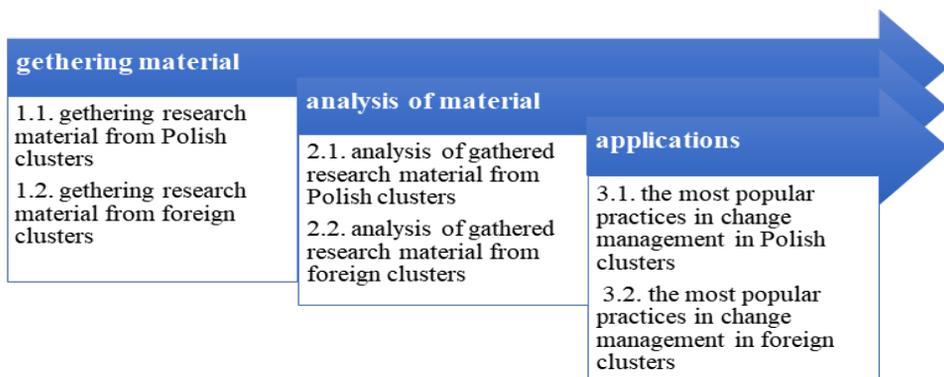


Figure 1. The course of the research process of each stage

Source: own elaboration and idea

The collected research material was analyzed and an attempt was made to identify change management signs based on information provided by the entities analyzed. The study of the subject literature indicated above, consisted of the

analysis of its content and the identification of reasons which testify to the correlation between change management and the quality of cluster management. Based on the conducted analyzes and comparisons, proposals have been made for practices for managing change in clusters. With the intention to achieve the main objective and specific objectives, the analysis focused on the answers to the following research questions:

Q1: What are the practices of change management implemented in selected domestic and foreign clusters?

Q2: What research in the field of change management is conducted in Polish clusters?

Q3: Is change management relevant to cluster implementation “cluster management standards”?

Q4: Is there a correlation between the Polish and foreign cluster benchmarks and change management?

Each specific objective corresponds to one research question, assigned according to numbering. The results obtained during the study are presented in the next chapter.

3.1. Results of change management research

During the analysis, attention was paid to the activities undertaken regarding organization management, and in particular to those related to the changes requiring control. This could suggest that the change management process took place and produced tangible results, although some of the clusters taking part in the study have not defined it as change management in the study (Tables 1–2), where:

- 1) the change referred to the whole organization and was the response to the situation inside the cluster or the economic environment, and the change process was highlighted,
- 2) the cluster offer included support for cluster members on the basis of planning and implementation of changes in specific areas,
- 3) the cluster participated in change management training.

The results of this analysis for national entities are presented in Table 1.

Table 1. Results of analysis of national clusters in question Q1

No.	Cluster name	Label type	WWW	Identified fields of change management
1	Cluster of Innovation in Agribusiness	Bronze	http://klaster.sggw.pl	Supply chain management, quality management, project management, innovation management
2	AgroBio Cluster	Bronze	http://agrobiocluster.pl/	Supporting internationalization, project management, innovation management (product, marketing, process)
3	Cluster of the Center for Biomedical Engineering	Bronze	http://www.kcibio.wat.edu.pl/	Project management, innovation management, supporting internationalization
4	Mazowiecki Cluster of Technologies, Materials and Machines BM3	Bronze	http://bmklaster.com	Project management, innovation management, supporting internationalization
5	Bydgoszcz Industrial Cluster	Bronze	http://www.klaster.bydgoszcz.pl/	Technology transfer, innovation management, supporting internationalization
6	Innowator Świętokrzysko-Podkarpacki Building Cluster	Bronze	http://www.klaster-innowator.pl	The cluster has participated in a series of seminars on: quality management, human resources management, project management and change management, supporting internationalization
7	Interizon – Pomeraian ITC Cluster	Bronze	http://interizon.pl	Project management, innovation management
8	Cluster of Lublin Medicine	Bronze	http://medycyna.lublin.eu/	Project management, innovation management
9	North-South Logistics and Transportation Cluster	Bronze	http://www.klasterlogtrans.pl/	Project management, innovation management, supporting internationalization
10	Polish Aluminum Cluster	Bronze	http://www.polskiealuminium.pl/	Project management, innovation management, supporting internationalization
11	Polish Wood Cluster	Bronze	http://web.archive.org/web/20180323191201/http://polish-wood-cluster.pl/	Innovation management, technology transfer, supporting internationalization
12	Radom Metal Cluster	Bronze	http://www.klaster-metalowy.radom.pl/	Project management, innovation management, supporting internationalization
13	Cluster Together	Bronze	http://web.archive.org/web/20160312160627/http://razem-klaster.pl/	Human resources management and business management

No.	Cluster name	Label type	WWW	Identified fields of change management
14	Silesian cluster of air	Bronze	http://www.aerosile-sia.eu	Project management, innovation management, human resources management, supporting internationalization
15	South Poland Cleantech Cluster	Bronze	http://spcleantech.pl/	Participation in seminars on change management, entrepreneurship, innovation and networking, supporting internationalization
16	BTM Cluster	Silver	http://btm-mazowsze.pl	Managing innovation, intellectual property, supporting internationalization
17	Mazowiecki ICT Cluster	Silver	http://www.klaster-ict.pl/	Using a cluster management platform, supporting internationalization
18	Mazowiecki Chemical Cluster	Silver	http://www.chemical-cluster.eu	Strategic management, R & D projects, product management, supporting internationalization

Source: own elaboration and concept

The results of the analysis of the foreign entities are presented in Table 2.

Table 2. Results of the analysis of foreign clusters in question Q2

No.	Cluster name	Label type	WWW	Identified fields of change management
1	Chemie Cluster Bayern GmbH	Gold	http://www.chemie-cluster-bayern.de/	Production processes management, project management, innovation and technology transfer management
2	Eco World Styria	Gold	http://www.eco.at/	Innovation and technology transfer management
3	Baden-Württemberg Connected e.V.	Silver	http://www.bwcon.de/	Innovation management and technology transfer, project management, production management, comprehensive cluster management seminars
4	InnoZent OWL e. V.	Silver	http://www.innozent-owl.de/	Innovation management, management of knowledge
5	ScotlandIS	Bronze	http://www.future-solent.org.uk/	No information
6	Greentech South	Bronze	http://www.future-south.org/	Cluster management, project management

Source: own elaboration and concept

The analysis does not provide a satisfactory image of change management in clusters. One may conclude that change management is not an element of management which clusters communicate in a clear way about. Desk research analysis does not provide a way to determine the role that change management plays in cluster managing. Only Świętokrzysko-Podkarpackie Building Cluster and South Poland Cleantech Cluster inform on their websites about participation in events addressing change management issues. The vast majority of clusters are limited to presenting their offerings and the benefits of joining their organizations. Half of the analyzed units inform about changes in human resources, enterprise, product, supply chain, design and quality. Almost all clusters support internationalization, project management and innovation management. Based on the collected data, however, it cannot be determined whether these processes have been controlled and, consequently, whether the change management actually occurs. Analysis of foreign clusters provided similar conclusions. The problem can be seen in the following areas (Mazovia Development Forum, 2016):

- 1) cluster managers do not have the appropriate competencies within the scope and their acquisition is not a priority;
- 2) most of the clusters created in recent years were called upon to perform certain activities, (unrelated to the idea of creating a cluster), and after their completion they ceased to function, which makes identification of change management impossible;
- 3) change management is present in clusters, but there is a problem with its direct identification, resulting from the difficulty in finding information about cluster management.

A telephone interview conducted among cluster coordinators confirms the conclusions of the desk research. Respondents have knowledge of change management at a “rather high” level (on a scale set up for the survey), but when asked how they use this knowledge in cluster management and coordination, they were unable to respond strongly and provide concrete examples. Cluster coordinators believe that change management would affect the quality of middle management (2 out of 3 respondents) and high management (1 out of 3 respondents). All respondents intend to begin assessing the quality of cluster management in the future.

However, a different view was expressed by the expert who said that change management is a necessary management element for clusters operating in high-developed countries. When asked about the situation in Poland, he said that clusters in Poland were not at an adequate level of organizational and financial maturity to focus their attention on change management. In his opinion a bronze or even silver label is more an encouragement and credibility to make clusters more visible in the process of internationalization and recognition. When it comes to clusters with the gold label, their actions reach far beyond the actions of those with bronze

or silver label. This is especially evident in the area of change management, or the precisely defined strategy management, and the fact that the cluster is 2–3 years ahead in planning the work, the financial management, etc.

3.2. Research results on cluster management standards

There is no research on the management of change in clusters in the Polish literature of the subject. The role of cluster coordinator, more and more often called manager, is emphasized (Kępka, Kacperk, 2017). It consists of adapting the organization to a dynamically changing environment and quickly reacting to the declining tendency of an individual cluster by transforming its structures and relationships. Within the framework of the “Cluster Management Standards” project, PAED defined the quality of management as a key factor for the success of the cluster. The cluster management standards were developed during the project. These include the areas of organization, resources, processes, services for the cluster and collaboration with the environment. The cluster coordinator/manager is obliged to monitor and evaluate activities aimed at achieving the developed standards. The results of research on the application of management standards are presented in Table 3.

Table 3 The results of research on the application of management standards

No.	The name of the cluster management standard	Referral to change management
1	1.1.4. Prevention of conflicts of interest in the cluster	There are mechanisms that are approved by cluster members and/or regulatory body that regulates how conflicts of interest are managed between the coordinator and the individual members of the cluster, or between the members themselves.
2	1.2.1. Current cluster development strategy	There is an up-to-date cluster development strategy, approved by cluster members and/or its supervisory body [...]. The coordinator and members of the cluster verify the development strategy and analyze potential future directions for the cluster. The frequency of strategy verification and updating should be adequate to the extent of its development, changes in its structure and external environment, its activities, and the needs of its members.
3	2.3.3. The coordinator actively raises own skills and competences related to cluster management	The coordinator has identified the training needs of his staff and is constantly analyzing the opportunities for qualification [...]. Their frequency and form is adequate to the degree of cluster development, actions taken, changes in its structure and external environment, as well as the needs of its members.

No.	The name of the cluster management standard	Referral to change management
4	3.3.1. Conducting monitoring and evaluation of strategy implementation activities	To have a mechanism to monitor and evaluate the achievement of the objectives of the strategy and the indicators set. It is the coordinator's responsibility to monitor the implementation of the strategy and action plan and, in particular, to monitor the achievement of the objectives and the implementation of the projects. The information obtained should be used effectively for corrective actions. The results of monitoring and evaluation are discussed at meetings with cluster members and may be the basis for a change of approach.
5	3.3.3. Coordinator has implemented quality management system	The coordinator conducts periodic analysis and/or measurement of the quality of service provided. Analysis/measurement takes place with the participation of cluster members and/or organizations from the external environment and its frequency and scope should be adequate to the degree of cluster development, service offerings and members' needs. The coordinator has implemented a quality management system.
6	3.4.1. Innovative process support in the cluster	The coordinator regularly engages in innovation-related processes (e.g., communicates knowledge and information, promotes innovation, initiates change, mediates technology and know-how acquisition, searches for technology, organizes expert workshops, or exchanges expert internships). The scale of these activities should be adequate to the level of cluster development and the needs of members. [...] Within the framework of the cluster structure, there is an opinion body and selection of innovations of interest for cluster development. [...]
7	4.2.1. Supporting cluster members in range of existing value chains	The coordinator supports the process of joint procurement [...]. The coordinator supports the processes of joint sales [...]. The coordinator supports any other than the purchase and sale of cluster value creation processes (e.g. in the area of logistics, promotion, distribution).
8	4.4.1. Coordinator conducts activities on development of skills and knowledge of their members	Coordinator is involved in the organization of events [...] aimed at acquiring new skills or knowledge [...] appropriate to the level of cluster development, represented industry, changes in the external environment of the cluster and the needs of the members themselves.
9	5.1.1. Coordinator in a lasting way cooperates with self-government units and government	The coordinator has a current contract, confirming cooperation with a local government unit in areas such as [...] the co-ordination of planning documents and strategies. [...] The coordinator actively participates in the co-creation or consultation process and creates documents of strategic character for the development of the region [...].

Source: study based on Buczyńska et al., 2016b

Cluster management standards were developed in response to PAED's diagnosis of the need to improve the quality of cluster management processes, resulting from the development of clusters in Poland. They are a response to the problem of inadequate quality of cluster management and the lack of proper preparation of coordinators, which are crucial for cluster development. Standards can help cluster coordinators improve their operations and better adapt to changing internal and external environments, including the new programming period in which individual funding (for the coordinator) is replaced by the financing of specific projects, especially the innovative ones. Bearing in mind the above, it should be stated that cluster management standards require change management, which is the answer to the Q3 research question. Change management is an indispensable element in the process of improving cluster management processes. In order to determine the direction of changes in the cluster management process, it is necessary to evaluate the standards periodically. The standards listed in Table 3 are very important for the proper functioning of the cluster, and a structured approach to change management is an element of helping to achieve them.

3.3. Results of research on the use of cluster benchmarks

Benchmarking of foreign clusters is a study focusing on the characteristics of cluster management organizations and their impact on clustering, in particular. To obtain the broad-based comparative portfolio, more than 140 cluster management organizations from 8 countries were benchmarked. As many state funding programs support cluster management organizations, the project also includes 16 cluster programs from 9 countries to help better understand successful strategies and provide implementing institutions with the opportunity to learn from each other. The survey in Poland was conducted in 35 clusters based on methodology developed especially for this purpose. This study was designed to assess the quality and effects of the cluster's performance from the perspective of its constituents. A total of 618 subjects out of 1917 members (32.23% of the population) participated in the survey, out of 35 clusters covered by the benchmark analysis. The results of the analysis are presented in Table 4.

The European clusters involved in the study are struggling with two major problems. The first problem is to adjust the quality of management to the level of management of "world-class" clusters. The second problem is related to influencing the creation of the external environment (cluster policy and favorable legal regulations). Foreign clusters are also characterized by a more mature organization and structure than the Polish clusters. Recommendations for foreign clusters are related to the evaluation of currently applied solutions and their subsequent improvement. In the case of Polish clusters, there are recommendations for the re-

development of applied solutions and clues as to how clusters should build their strategy, organization and in which directions they should conduct their business and grow. The benchmark of clusters in Poland shows that the areas that need to be improved in particular are: increasing the competences of cluster management, striving for financial stability, improving internal and external communication, maintaining a sustainable structure of active cluster members. The analysis makes it possible to conclude that benchmarks refer to organizations at different levels of development. Polish clusters will face long-term and continuous changes in the coming years, ranging from cluster management to cluster policy. Acceptance of specific models of change management can be a factor in supporting this change process, which in turn is the answer to Q4.

Table 4. Selected recommendations from the foreign and Polish benchmark clusters for the Q4 question

No.	“Clusters Are Individuals. Creating Economic Growth through Cluster Policies for Cluster Management Excellence”	“Benchmarking Clusters in Poland – 2014 Edition General Report”
Selected recommendations for cluster managers		
1	Clusters with a large impact on the business activities of SMEs have an active cluster management organization.	Cluster coordinators must focus their efforts on stimulating innovative processes in clustered enterprises.
2	The activities of the cluster management organization create a much better environment for achieving appropriate results and impacting the environment.	Cluster coordinators should be much more aware of the cluster’s strategy and actions to enhance the market expansion of businesses, including the preparation of common market offers.
3	The visibility and attractiveness of the cluster and the impact of the cluster management organization on the development of the SME sector depends on its age and size. Larger and more mature clusters provide much better conditions for performance and impact through the cluster management organization.	Large clusters create better conditions for conducting knowledge creation and innovation activities, including R & D. They gain greater recognition in local and regional environments. However large clusters can be conducive to the emergence of differing member expectations. Especially in the case of new members selection, cluster coordinators should take into account industry links and cluster development needs.
4	Excellence in cluster and offer management and the frequency of business-related services are important determinants of the cluster’s impact on the environment.	Cluster coordinators should re-evaluate marketing strategies, including the need to promote not only the cluster as such, but at least a common cluster market offering, market offerings of individual participants, and especially industry-leading businesses.

No.	“Clusters Are Individuals. Creating Economic Growth through Cluster Policies for Cluster Management Excellence”	“Benchmarking Clusters in Poland – 2014 Edition General Report”
5	In the context of “world-class clusters”, cluster management excellence depends on: creating and implementing a strategy for further cluster development, providing – through cluster management – professional services that meet the needs of cluster members, sustainable funding for the cluster management organization and the provision of appropriate personnel, additionality principles.	With regard to the fixed costs of clustering, there should be a stronger relationship between the amount of membership fees and the services offered by the coordinator of the cluster. Cluster coordinators should emphasize actions reinforcing a belief among the members about the need to increase their financial participation.
6		Cluster coordinators should be involved in the organization of R & D workshops for members.
7		Supporting the internationalization of enterprises should become one of the key tasks of clusters coordinators.
8		Clustered communications formatted by cluster coordinators should be tailored to the specific conditions of the cluster, including its phase of development.
Selected recommendations for cluster policy		
1	Different types of clustering programs serve different purposes	Clusters with a large number of members, representing industries targeted at external markets, or small clusters serving local/regional markets, should be treated in the context of their clusters development policy and regional development policies. Different forms of support should be provided for both groups of clusters.
2	Most cluster programs are high on government agencies	Clusters should be considered as a key instrument for enhancing innovation of the regional economy.
3	Coordination with other funding programs highlights the need to introduce improvements	In the development of instruments supporting clusters at the regional level, much more support should be given to clustering activities related to joint market expansion of enterprises.
4	Internationalization of clusters is considered important, but the importance of supporting this aspect varies from program to program	The task of regional authorities is to adapt the vocational education system to the needs of the economy, including, in particular, clusters.
5	Implementing institutions take a more active role in individual cluster’s development.	Regional authorities should consider clusters as strategic planning partners for development directions, including the so-called regional specializations.

Source: compiled on the basis of *Cluster Benchmarking in Poland – 2014 General Report* and *Clusters Are Individuals* (Plawgo, 2014), *Clusters Are Individuals. Creating Economic Growth through Cluster Policies for Cluster Management Excellence* (Lämmer-Gamp et al., 2011).

4. Summary

The results of the research presented above allowed us to carry out the defined objectives of the thesis and to answer the research questions. The basic conclusion of the study is that if a cluster is not created solely for the purpose of executing a single, predetermined project, then the introduction of change management principles, including systems and processes in the organization, is needed and justified. Clusters that have undergone an embryonic (pioneering) phase are learning organizations (Kudelska, 2013), and change management tailored to their needs is a must and can contribute to an increase in the level of development and the effectiveness of the cooperation of the participants in its structure. Increasingly, the duties of the cluster coordinator are identified in the literature with the responsibilities of the manager, and the coordinator becomes responsible for managing the organization so that it can be continually streamlined and modified.

The interviews and information from Table 3 show that change management is present in clusters. Clusters mainly act as coordinators and initiators of activities, integrate companies and support internationalization. Along with the development, the cluster expands its activities by offering consulting services, lobbying, technical facilities, HR support, technology park management, assistance in technology transfer and acquiring innovations. These activities require change management.

Desk research of clustered web pages does not provide a way to determine the role that cluster management plays in managing change. Based on the collected data, it cannot be stated whether these processes have been controlled and consequently whether the change management actually occurs. Applying cluster policy standards requires clusters to make and deploy changes on time, so it can be said that change management is an essential part of the process of improving cluster management processes. Benchmark analysis allows to draw the conclusion that the compared pieces of research are related to organizations at different levels of development. Polish clusters will face long-term and continuous changes in the coming years, from cluster management to cluster policy. Adoption of specific change management models can be a factor in supporting this change process.

Summarizing the conducted research, it should be stated that the identification of change management practices in Polish clusters is extremely difficult and requires a further, in-depth qualitative examination. On the other hand, desk research and telephone interviews have already concluded that cluster change management takes place, and its level depends on many factors, including: the level of development, the coordinator's competencies, goals and cluster strategy.

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Wpływ świadomego zarządzania zmianą na jakość zarządzania klastrem

Streszczenie: W artykule przeanalizowano rolę, jaką pełni zarządzanie zmianą w sprawnym funkcjonowaniu organizacji oraz wskazano na potrzebę stosowania nowego podejścia do zarządzania zmianą w klastrach. W celu wykazania słuszności takiego stwierdzenia dokonano przeglądu dostępnych źródeł literatury oraz wiedzy praktycznej pod kątem występowania oraz przykładów stosowania pojęcia zarządzania zmianą w klastrach. Pokazano, że klastry coraz częściej przekształcają się w grupę świadomych kooperantów, współpracujących i koordynujących swoje działania w długim okresie, w efekcie uzyskując dużo wyższy poziom efektywności działania i rozwoju niż pojedyncze podmioty.

Słowa kluczowe: zarządzanie zmianą, klastry, menedżer klastra, zarządzanie klastrem

JEL: D23, L16, L22, M21

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