

## Clusters' Activities and Economy Stage of Development: Evidence from V4 and Advanced Economies<sup>1</sup>

Drahomíra PAVELKOVÁ – Magdalena BIALIC-DAVENDRA – Eva JIRCIKOVA – Lubor HOMOLKA\*

### Abstract

*This article examines the impact of maturity of economy on an activities' focus of cluster organisations. For a basis of research concerning the focus of activities of clusters from advanced economies and clusters from the Visegrad Group countries (V4), the authors of this article obtained data from a large sample of clusters. This research has tested whether differences in clusters' activities and their implementation in various advanced economies are not caused by different thinking and attitudes of clusters' managers or the respective age of clusters. The research results confirmed that the selection and use of activities could be different according to the maturity of the economy, considering the same stage of the clusters life cycle and similar views of managers regarding the focus of activities that contribute to the successful development of clusters.*

**Keywords:** cluster; cluster initiative; cluster organisation; economic maturity; advanced economies; V4 economies

**JEL Classification:** L14

### Introduction

The principle of clustering in many countries has become a central element of industrial, regional and innovation policy development. Public institutions knowingly

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\* Drahomíra PAVELKOVÁ – Magdalena BIALIC-DAVENDRA – Eva JIRCIKOVA – Lubor HOMOLKA, Univerzita Tomáše Bati ve Zlíně, Fakulta managementu a ekonomiky, Centrum polymerních systémů, Mostní 5139, 760 01 Zlín, Česká republika; e-mail: pavelkova@fame.utb.cz; bialic@fame.utb.cz; jircikova@fame.utb.cz; homolka@fame.utb.cz

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encourage the emergence and development of clusters as tools for increasing the competitiveness of regions.

While examining the cluster issue, the word *cluster* is often replaced with *cluster initiative* (CI), or the term *cluster organisations* have also being used. Cluster organisations have defined objectives and are focused on a range of activities aiming to help achieving their goals. Governments' cluster policies are often focused on supporting the cluster organisations.

*Clusters* and *cluster policy concepts* have been validated through practical experience in developed and developing countries. There are a number of studies aimed at examining the impact of clusters on regional development (e.g. Andriani et al., 2005; Braunerhjelm and Borgman, 2004; Porter, 2001; Rocha, 2004; Žižka, 2008), where the regional economy often appears to benefit indirectly (e.g. Audretsch and Feldman, 1996; Porter, 2003; Storper, 1997; Skokan, 2009); examining the impact of clusters on the performance of companies (e.g. Baptista and Swann, 1998; Bathelt, Malmberg and Maskell, 2004; Feldman, 2003; Hakanson, 2005; Krugman, 1991; Marshall, 1922; Porter, 1990; Porter, 2000; Porter, 2008; Rocha, 2004; Visser, 1999; Wennberg and Lindqvist, 2010), examining the impact of cluster policy on a cluster development (e.g. Andersson et al., 2004; Andriani et al., 2005; Boekholt and Thuriaux, 1999; MacNeill and Steiner, 2010; OECD, 2001; Porter, 2008; Raines, 2000; Roelandt and den Hertog, 1999; UNCTAD, 1998). The issue of the impact of the economic maturity on the status and development of clusters, however, is very rarely studied; among the major studies can be classified the investigation of the authors Ketels, Lindqvist and Sölvell, published in 2006.

Objectives and activities of clusters may be related to their maturity (the stage of the life cycle in which they are), the maturity of the economy (regions) in which clusters operate. Numerous authors depict the life cycle of clusters (Van Klink and De Langen, 2001; A Practical Guide to Cluster Development, 2004; Bergman, 2008; Górczyński, 2006; Menzel and Fornahl, 2009; Staszewska, 2009; Sonderegger and Täube, 2010).

The study of Ketels, Lindqvist and Sölvell (2006) brought a number of findings and comparisons from the sample of clusters and cluster initiatives in the countries with advanced, developing and transition economies. In their study, they indicate that clusters in economies with different levels of development vary in:

- the degree of centralization of economic policy and its support of the development of competitiveness and clusters;
- the level of trust among companies and between companies and government;
- different types of objectives;
- type of industry selected by CIs;

- activities preferred, size of clusters, organizational form of the CI;
- types of actors taking the initiative to start the CI;
- and sources of income and targets and performance measuring.

However, their findings and conclusions had several limitations arising from the structure of individual samples, especially in transition and developing economies. Countries (also within individual groups) differed significantly (statistical methods are described in subsection Methods of Processing and Evaluation of Data): (i) by their performance, (ii) samples included in a large extent purely very young clusters (unlike in advanced economies). This is due to development of cluster initiatives as well as cluster policies in analysed countries mostly after the year 2000.

The rate of those limitations in research, whose results are included in this article, is reduced by defining the samples for comparison. Clusters in transition economies with very similar performance and historical development are compared with clusters in advanced economies. Furthermore, they are investigated according to the age, whereby, the life cycle of clusters and the changing goals and activities in different stages of development of clusters and cluster initiatives, are taken into account.

The goal of this research, cumulating with the presented results in this paper is achieved through processing and statistical evaluation of the data obtained by extensive research gathered from managers of clusters. The status of the use of activities by the cluster organisations in various developed countries is being mapped, the differences identified and the prediction of further development of the focus of clusters' activities in transition economies in the subsequent stages of their life cycle expressed.

## 1. Theoretical Background

Theoretical sources of the cluster concept date back to the end of the nineteenth century, when the British economist, Alfred Marshall began to examine the spatial concentration of industries. In his book, *Principles of Economics* (1890), amongst others he noted that industries are often locally concentrated and that they gain substantial benefits from the externalities such as economies of scale and *knowledge spillovers* from such concentrations.

During the twentieth century, a number of other authors (e.g. Weber, 1909; Christaller, 1933; Lösch, 1940; Harris, 1954; Schumpeter, 1943; Hayek, 1945; Nordhaus, 1969; Olson, 1965; Williamson, 1985) investigated the relationship between the concentration in the industry (or innovation) and economic performance. The greatest degree of penetration of aforementioned topics into the public had been achieved thanks to the work of Michael Porter in the area of clusters'

competitiveness. He defined cluster as “*geographic concentrations of interconnected companies, specialized suppliers, service providers, firms in related industries, and associated institutions (for example, universities, standards agencies, and trade associations) in particular fields that compete but also cooperate*” (Porter, 1990, p. 213). During the last years, the Porter’s idea of clusters (e.g. Porter, 1998a; 1998b; 2000) demonstrated around the world a considerable influence on the study of regional and local “clustering” of industrial specialization, innovation and enterprises. Also, policy makers world-wide, such as the World Bank, OECD, national governments, regional and local development agencies, etc., have seized on the Porter’s cluster model as a tool for promoting national, regional and local competitiveness, innovation and growth.

As previously mentioned, the term *cluster initiative* (CI) often appears alongside the term *cluster*. According to *The Cluster Initiative Greenbook*, CIs are defined as an “*organized efforts to increase growth and competitiveness of clusters within a region, involving cluster firms, government and/or the research community*” (Sölvell, Lindqvist and Ketels, 2003, p. 9). In accordance with the definition, CI can be considered only as an initiative, in which companies and at least one other party of the *Triple Helix* industry-government-university participate simultaneously. This aspect, not a form of cooperation, constitutes the basis of this definition.

The term *cluster organisations* have also being used in common cluster practice. According PwC “*a cluster organisation typically functions as a mediator between various cluster members and adds value by stimulating collaboration both within the cluster and between the cluster and the outside world*” (PricewaterhouseCooper, 2011, p. 6).

Markets and firms (even products and technologies) go through their developing, growing and declining processes. In the literature, we can meet with the Klepper’s (1996) industry life cycle model or the Utterback and Abernathy’s (1975) technology life cycle model. This also applies to clusters, which evolve over time, and different phases of their development can be identified. Various clusters’ activities can be associated and implemented in different phases in the cycle. According to Pavelková et al. (2009), the cluster activities usually follow a certain path, starting from creating a platform for mutual cooperation of firms (networking), followed by common projects in sales, human resources, production and marketing areas, and projects in the area of R&D. In addition to that, cluster activities are always accomplished in connection with cluster vision and goals, and in regard to established priorities.

Within clusters’ life cycle, four stages of development can be distinguished: *embryonic; established; mature; declining clusters* (A Practical Guide to Cluster

Development, 2004). Embryonic (first) stage of clusters' life cycle constitutes as an initial stage of development, in which clusters' actors start to cooperate, and new ideas, markets and processes are being created. It is a stage of awareness building of companies and investing in a cluster. The established stage represents a further growth of clusters. In this phase, new companies (e.g. competitors, spin-offs) and other actors progressively enter the cluster, new cooperative links develop and competition rises. Mature clusters characterize developed relations inside and outside of the cluster, and standardization of processes and products. They are stable or may encounter difficulties in further growth. In the declining phase, clusters either have reached their peak and have lost their potential and significance (they are failing or declining; cluster products and services are replaced by other cheaper substitutes), or are ready to further innovate and re-start the cycle again.

Van Klink and De Langen (2001) describe four stages of clusters' development and distinguish certain related characteristics such as character of the value chain, strategic relations, cluster dynamics, co-operative domain, determinants for success and government's role in promoting clustering.

In the literature, there are many further approaches distinguishing the phases of the life cycle (e.g. Andersson et al., 2004; Pouder and St. John, 1996; Tichy, 1998; Swann, 1998; Brenner, 2004; Van Klink and De Langen, 2001; Wolter, 2003; Bergman, 2008; Sonderegger and Täube, 2010; Malakauskaite and Navickas, 2010; 2011; Chandrapala, Knapkova and Kramna, 2010 and other).

## **2. Research Methodology**

### **Identification of *Clusters***

For purposes of this research, the clusters, that are *organized, have a cluster management and defined objectives and activities*, have been identified and addressed.

### **Survey Data**

Two methods of investigation and acquiring data were used within this research – questionnaire and structured interviews. Questionnaires were directed to the cluster management (steering group) of 640 cluster organisations around the world. The research was based on the results of 150 completed questionnaires. In one-third of the clusters, this investigation was supported by a structured interview with the manager of the cluster. The aim of the survey was to obtain information about tools, methods and good practices used for the successful cluster development. The goal of the interviews with clusters managers was to gather

detailed information regarding the process of cluster development, and also to receive the feedback from cluster managers, their views and experience.

This article presents the results of research aimed at the clusters' activities. These were identified by literature research and pre-research communication with cluster managers and experts interested in the topic of clusters and cluster initiatives.

### **Characteristics of Examined Samples**

The research focuses on clusters from advanced economies and clusters from the Visegrad Group (V4) countries. V4 countries (Czech Republic, Slovak Republic, Hungary, Poland) are characterized by similar historical and political development, social and culture characteristics and economic performance. According to the EBRD, all these countries were classified as transition economies.

On the basis of previous criteria, clusters were for research purposes divided into the examined samples:

- **Sample 1:** Clusters from advanced economies (AE): Australia, Austria, Belgium, Canada, Denmark, Finland, Germany, Great Britain, Iceland, Italy, New Zealand, Norway, Spain, USA; *46 clusters*.

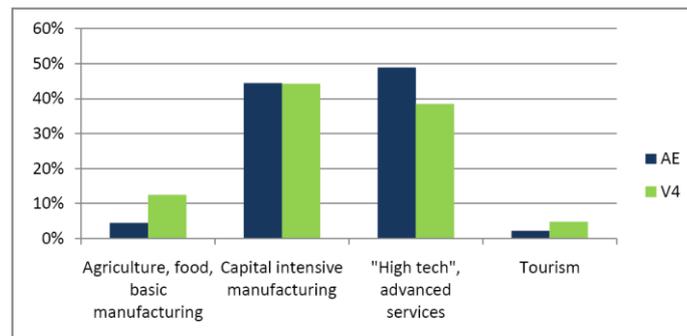
- **Sample 2:** Clusters from the Czech Republic, the Slovak Republic, Poland and Hungary (V4); *104 clusters*.

Clusters in samples differ in the type of industry focus; ranging from agriculture to "high-tech" industries. There are four main industry groups presented on Figure 1. The division into groups respects the distribution in the study of Ketels, Lindqvist and Sölvell (2006). The aforementioned samples do not show significant difference in the percentage representation of targeted industries according to the defined groups (with the exception of the first group; clusters' representation in this group, however, in both samples is relatively low).

On Figure 2 the age of two categories of clusters is contrasted. The age of clusters in samples differ significantly.

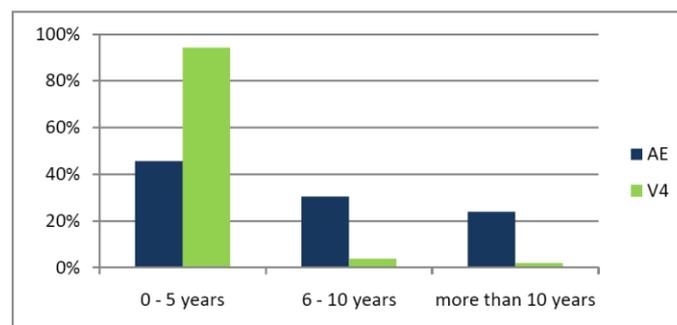
For purposes of this research, clusters were divided into two categories depending on their age; for young (established maximum up to 5 years) and older clusters (created more than 5 years ago). The criterion for inclusion in two age groups was the age of clusters at the time of the implementation of this research. The boundary of five years has been tested in research as a boundary where there is a significant change in the number and intensity of activities implemented by clusters. Clusters established a maximum 5 years ago were labelled as "embryonic clusters" and more than 5 years ago as "established clusters". Due to the relatively small number of investigated clusters that are older than 5 years, more detailed distribution, which could capture the developmental stages in the life cycle of clusters in a deeper way, was not used.

Figure 1  
Target Industries (Sample 1 and Sample 2)



Source: Own research.

Figure 2  
Age of Clusters (Sample 1 and Sample 2)



Source: Own research.

Based on given assumptions, further categories were defined as follows:

- **Sample 3:** Embryonic clusters from advanced economies (EMB AE); 21 clusters.
- **Sample 4:** Established clusters from advanced economies (EST AE); 25 clusters.
- **Sample 5:** Embryonic clusters from V4 (EMB V4); 98 clusters.
- **Sample 6:** Established clusters from V4 (EST V4); 6 clusters. This sample is, however, too small to be statistically evaluated.

#### Methods of Processing and Evaluation of Data

Within the presented research, different statistical characteristics were used – relative frequency, mode, and mutability. In order to test the presence of dependence between the implementation of activities and the age of the cluster,

a contingency table was constructed. Due to the small sample size, dependence was set both directly and by using simplified Monte Carlo simulations (5 000 replications). As Hope (1968) showed, at  $\alpha$  set to 5% and sample size larger than 160, this procedure corresponds to the most powerful test based on  $\chi^2$  distribution. The intensity of existing dependence in a contingency table was found by the Yule  $\varphi$  coefficient of association, which measures the product-moment correlation of two binary variables. The probability of committing Type I error was set on  $\alpha = 5\%$  for all inferential statistical tests used. In the text, we refer to this  $\alpha$  as the confidence level.

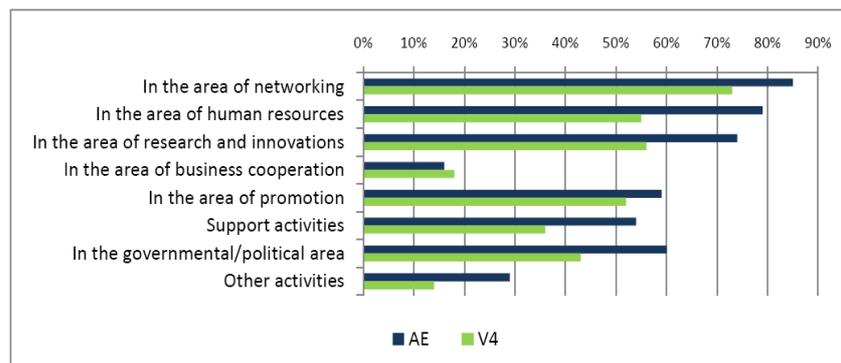
### 3. Research Results

Within the research, the preference in the use of individual cluster activities was investigated. In the survey, clusters managers reported if their cluster implements individual activities (code 1) or not, however, is planning to do so in the future (code 2), or neither implements nor plans to implement the activity (code 3).

Clusters' activities were divided into the following groups, covering the areas of: (1) Networking, (2) Human resources, (3) Research and innovations, (4) Business cooperation, (5) Promotion, (6) Support activities, (7) Governmental/political lobbying, (8) Other.

Figure 3

#### Implementation of Activities in Advanced Economies and Economies of the V4 (Sample 1 and Sample 2) – According to the Groups of Activities



Source: Own research.

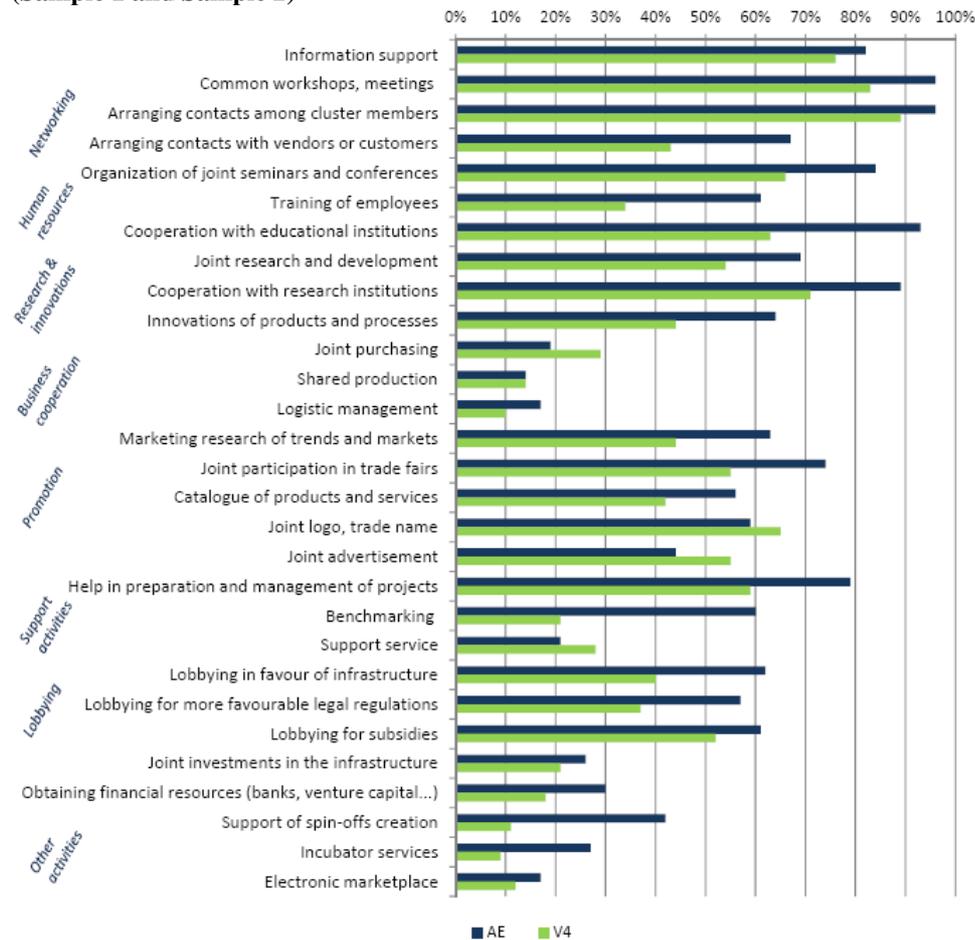
If we compare the sample including clusters regardless of their age, it is evident that the order of popularity of individual groups of activities in advanced economies and economies of the V4 is no different in its essence (Figure 3). Clusters

in advanced economies in comparison to V4 economies, however, more often implement specified activities (with the exception of business cooperation).

More detail use of individual activities in the identified groups in advanced economies and V4 can be seen in Figure 4.

Figure 4

**Implementation of Activities in Advanced Economies and Economies of the V4  
(Sample 1 and Sample 2)**



Source: Own research.

Activities ensuring networking among cluster members are popular and widespread, regardless of the maturity of the economy. Fewer clusters already provide contacts with vendors and customers. Towards strongly preferred activities in advanced economies belongs activities related to support of human resources; here almost every cluster has established cooperation with educational institutions. Notable is also the development of activities in the area of R&D, especially

the cooperation with research institutions. Many clusters cooperate in the area of promotion – in joint participation in trade fairs, in marketing research of trends and markets. In this area, clusters in V4 economies show a larger activity in the implementation of a joint logo, trade name or a joint advertisement than in the advanced economies. Relatively large difference exists in lobbying, where significantly more active are clusters in the advanced economies, mainly in lobbying for infrastructure or favourable legal regulations. In both samples, significantly used by clusters are support activities oriented on the preparation and management of projects.

A meaningful difference between the samples of countries is evident in the benchmarking, in which only one-fifth of clusters in the V4 countries is engaged in (compared to about 2/3 in the advanced economies). It is certainly connected with a lower level of trust in transition economies (according Ketels, Lundqvist and Sölvell, 2006, high-trust environment is more typical for advanced economies). Towards very little widespread activities in both samples belongs business cooperation in the form of shared production or logistics management. Only a joint purchasing in V4 is reported as having slightly higher activity, which probably relates to the fact that this activity supports the acquisition of confidence of clusters members in the benefits of clusters – it belongs to the low-hanging fruits type of activities.

The activities, to which unambiguously belongs support of spin-offs creation, are more prominent in advanced economies. Support of spin-offs in clusters from advanced economies is quite significant; in clusters from V4 it is negligible. A meaningful difference also appears in support for incubators. The results of research regarding the firm formation correspond to the results presented in the study of Ketels, Lundqvist and Sölvell (2006).

Regarding the most frequent answers in individual activities (evaluated using the mode), it can be stated that the clusters differ significantly only in benchmarking and support of spin-offs creation (the most often answer of clusters from the advanced economies was code 1 – cluster implements the activity, from the V4 code 3 – cluster neither implements nor plans the activity).

In order to verify statistical dependence in the implementation of the activities depending on the economic maturity, individual activities have been evaluated with the use of 2 x 2 contingency table. Statistically significant change in the structure of answers on significance level  $\alpha = 5\%$  has been identified in the activities listed in Table 1.

The null hypothesis that there is no relationship between the implementation of activities and assignment of clusters among clusters from advanced economies and economies of V4 was tested. In this case, the p-value was calculated

according to the asymptotic distribution. Due to the fact that it is not a continuous variable, it was necessary to perform a Yates correction in order to determine this value. The second approach to calculate the p-value is re-sampling. Discontinuous function was transferred to continuous; several thousand variants of the original combination table was created with the use of the simplified Monte Carlo method – 5 000 replication was performed in statistical software R (R Development Core Team, 2011).

Table 1

**Activities which Demonstrate the Influence of Maturity of the Economy on the Implementation of Cluster Activities (by Comparison of Clusters in Advanced Economies and V4)**

	<b>X-squared (Yates correction) (Monte Carlo Method)</b>	<b>p-value (Yates correction) (Monte Carlo Method)</b>	<b>Yates phi (Yule <math>\phi</math> coefficient)</b>
Common workshops, meetings	3.582 4.6356	0.05841 0.03479	0.1757962
Arranging contacts with vendors or customers	6.5223 7.4611	0.01065 0.0104	0.2245284
Organization of joint seminars and conferences	3.8151 4.6387	0.05079 0.04679	0.1782469
Training of employees	8.3513 9.4209	0.00385 0.004399	0.2514504
Cooperation with educational institutions	12.5945 17.5932	0.00039 0.0003999	0.3071004
Cooperation with research institutions	4.6756 5.6291	0.03059 0.025	0.1950241
Innovations of products and processes	4.6257 5.4288	0.03150 0.02559	0.1928308
Marketing research	3.5051 4.219	0.06118 0.04919	0.1705776
Joint participation in trade fairs	4.0433 4.808	0.04435 0.02859	0.1802398
Help in preparation and management of projects	4.42 5.2569	0.03552 0.0226	0.1897532
Benchmarking	19.4748 21.2257	0.00001 0.00020	0.3852681
Lobbying in favour of infrastructure	5.0661 5.9091	0.02440 0.019	0.2025728
Lobbying for more favourable legal regulations	4.3103 5.1016	0.03788 0.03359	0.1875731
Support of spin-offs creation	15.7877 14.0523	0.00007 0.0003999	0.3519882
Incubator services	6.1052 7.4282	0.01348 0.007998	0.2311714

Source: Own research.

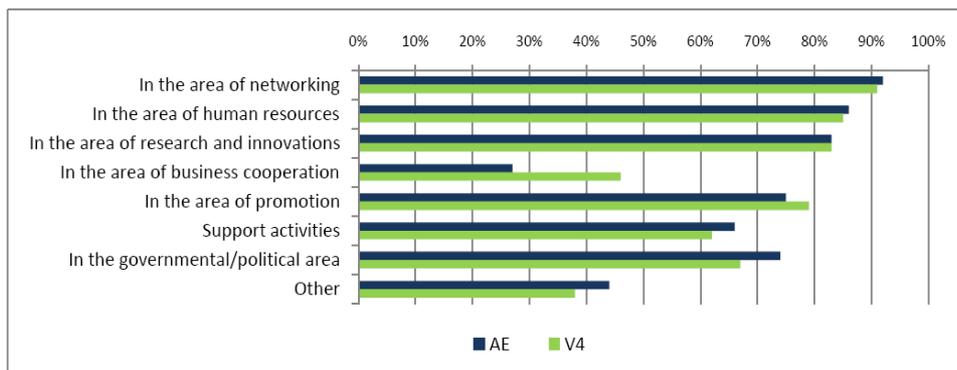
Pronounced preference of activities implemented in the clusters from the advanced economies in comparison to the clusters from V4 countries are reflected

in Table 1. The differences in operating activities were tested with use of the simplified Monte Carlo method. The disparity in the structure of answers in these activities, considering the maturity of the economy in which the cluster operates, was demonstrated. The table also depicts power of association as measured by the Yule  $\phi$  coefficient.

In Figure 5 are shown the answers of clusters managers regarding the current or future implementation of activities (code 1 + code 2). Almost identical results (again with the exception of business cooperation) mean that in the future, according to the clusters managers ideas, could appear in terms of operation of joint activities of clusters in the V4 countries, a very similar situation as in developed countries.

Figure 5

**Activities which Clusters Have Already Implemented or Plan to Implement in the Future (Sample 1 and Sample 2)**



Source: Own research.

Clusters managers were asked in the survey to rate the importance of *factors critical for a successful development of the cluster* (1 – insignificant, 5 – very important).

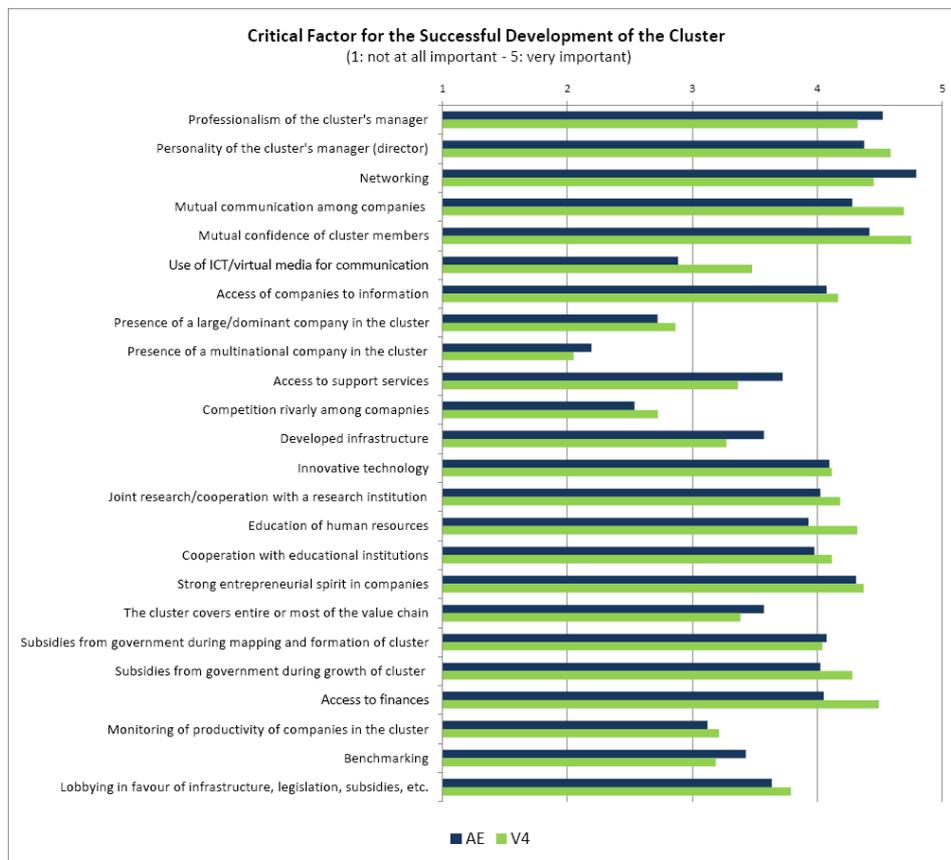
From Figure 6, it is clear that clusters managers evaluate their significance very similarly in advanced economies and V4 economies. Networking, mutual communication and mutual confidence of cluster members are evaluated as the most important. Also, the person of a cluster manager is seen as an important factor for the successful development of a cluster organisations. Communication and trust among cluster members are key factors of clusters success in the V4 economies. This confirms the existence of a lower level of trust in transition economies.

Other important factors are access to finance, grant sources and information. A prerequisite for success is training of human resources, research and innovation including cooperation with educational and research institutions.

These facts confirm that clusters managers in developed and transition economies have a very similar opinion in regard to the essential issues regarding the development of clusters and cooperation of actors involved. Therefore, it can be assumed that differences in clusters activities and their implementation are not caused by different thinking and attitudes of clusters managers.

Figure 6

**Factors Critical for the Successful Development of the Cluster (Sample 1 and Sample 2)**



Source: Own research.

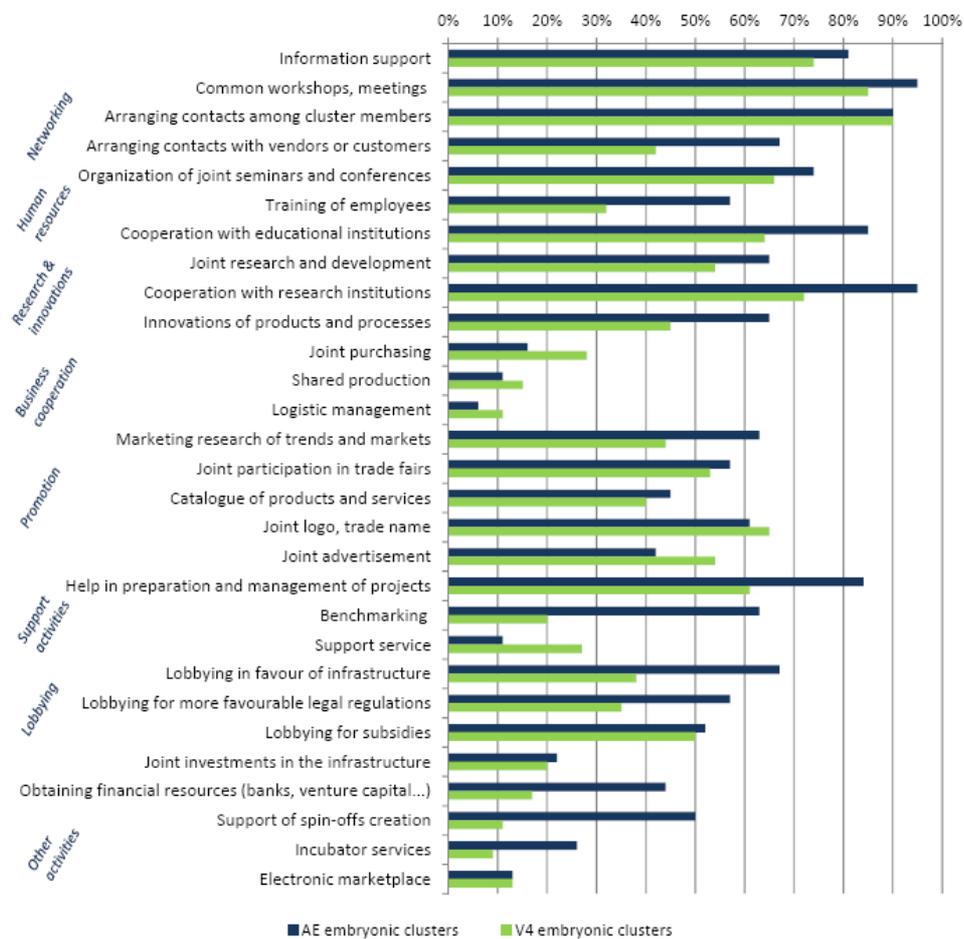
The listed facts might suggest that the disparity in the results regarding the current activities and their use is determined by both the economic maturity of the countries and the age of clusters (average cluster age in advanced economies is 7.3 years, median: 7; in the V4 economies 2.8 years, median: 2).

Therefore, in further research, the focus will be oriented on comparing the activities of embryonic clusters in advanced economies and embryonic clusters in the V4 countries. On the basis of this comparison, it can be determined whether different maturity of the economy has influence on the preference in

activities (the influence of age is eliminated). Research on the established clusters is not relevant due to their small sample in the V4 (given the fact that in these countries, clusters and cluster policies began to develop in the last decade). Figure 7 shows preferences in activities of embryonic clusters in advanced economies and embryonic clusters in the V4 economies, and compare them with the preferences of clusters excluding the influence of the age of clusters.

Figure 7

**Implementation of Activities in the Embryonic Clusters in the Advanced Economies and the V4 Economies (Sample 3 and Sample 5)**



Source: Own research.

In order to verify, whether the degree of the maturity of the economy in whose terms clusters operate, has an impact on the implementation of clusters activities, the Monte Carlo method with the significance level of 5% has been used for testing. Activities in which this influence was shown are listed in Table 2.

Table 2

**Activities with Visible Influence of Maturity of Economy on the Implementation of Cluster Activities (Comparison of Embryonic Clusters in Advanced and V4 Economies)**

	<b>X-squared (Yates correction) (Monte Carlo Method)</b>	<b>p-value (Yates correction) (Monte Carlo Method)</b>	<b>Yates phi (Yule <math>\phi</math> coefficient)</b>
Training of employees	3.7023 4.7271	0.05434 0.04259	0.2001506
Cooperation with research institutions	3.5779 4.7495	0.05855 0.04239	0.2014786
Benchmarking	12.5646 14.6424	0.00039 0.00039	0.3599705
Lobbying in favour of infrastructure	4.7669 5.892	0.02901 0.02779	0.2273407
Obtaining financial resources (banks, venture capital, etc.)	5.0938 6.6034	0.02401 0.0154	0.2439057
Support of spin-offs creation	14.3549 16.8926	0.00015 0.00020	0.3901099
Incubator services	2.954 4.4396	0.08567 0.04978	0.2027507

Source: Own research.

#### 4. Discussion

This research was aimed at determining which activities are preferred by the cluster organisations. Identification of the activities was based on the literature research and consultation with clusters managers. The results were evaluated in the following levels: (a) a comparison of activities implemented by clusters in the advanced economies and in the V4 countries; (b) a comparison of the activities that clusters of aforementioned countries plan to implement in the future, and (c) testing the null hypothesis that there exists no activity that confirm the influence of maturity of the economy, in which the cluster operates, on its selection and implementation.

Within this research, the samples of clusters from the advanced economies and the V4 countries were examined. They differed insignificantly in regard to the clusters' focus, however, very substantially in regard to their average age. In the first phase of the conducted research, the samples of clusters excluding the factor of their age were examined. The rate of implementation of individual activities in clusters from the advanced economies and the V4 countries was different (although, the ranking of popularity of individual groups of activities was very similar). In the case of already implemented activities, including the ones which are planned to be implemented in the future, no significant differences appeared (with the exception of activities focused on business cooperation that are more

preferred by young, less experienced clusters in the V4). The disparities in operating activities were tested. With the use of the Monte Carlo method, the difference in the structure of responses in the selected activities concerning the maturity of the economy, in which the cluster operates, was demonstrated. The aforementioned differences, however, may have been influenced both by the economic maturity, the way of thinking of clusters managers as well as by the clusters age.

The analysis of clusters managers' opinions on the significance of factors critical for the successful development of the cluster confirmed that the disparity in current clusters activities in the advanced economies and the V4 is not caused by a different way of thinking and approaches of clusters managers. Based on these results and the examination of the activities already implemented including activities planned for implementation in the future, the assumption that the maturity of economy could have an influence on the frequency of implementation of individual activities was expressed. In order to confirm this assumption, and eliminate the influence of clusters age on the test results, only the samples of embryonic clusters were tested.

This research confirmed that the selection and use of activities could vary according to the maturity of the economy.

As the weakness of this research can be identified the fact that only in one-third of surveyed clusters the results of a questionnaire survey were supported by a structured interview with the manager of the cluster. In this regard, it is likely to exclude that the questions the cluster manager was asked were not clear, as an opportunity to personally explain the potential misinterpretations was given. However, this was not possible for all respondents. Further limitation constituted lack of possibility to test the differences in the implemented activities by the established clusters in advanced economies and in the V4 countries, due to the low number of established clusters in the V4 (where clusters were formed mostly after 2000).

Despite the weaknesses, this research, which was very expensive and time consuming, brings valuable results. The results complement the findings published in a study by Ketels, Lindqvist and Sölvell (2006). Unlike the aforementioned study, conducted research was more precise thanks to its focus not only on examining clusters from variously developed economies, but also on their age – distortion of results due to different maturity of clusters was eliminated. The selection of the V4 countries as the representatives of transition economies was also a refined approach used in the above-mentioned study by Ketels, Lindqvist and Sölvell (2006). These countries are characterized by similar historical development, political, social and culture characteristics as well as economic performance, what creates a presumption of a homogenic sample and reduces the impact of other factors that could influence the obtained data.

## Conclusion

The research has brought a number of interesting results focused on the analysis of clusters activities in variously advanced economies. It confirmed that the selection and use of activities could be different according to the maturity of the economy. This research also confirmed that the ideas of clusters' managers and their members are very similar in regard to the focus of future cluster activities and the estimation of significance of the factors key to success, whether the clusters operate in advanced or in transition economies. Based on the obtained results, it is possible to assume further development of cluster organisations in transition economies. This may be an important and interesting result, not only for planning support for cluster development by government and regional institutions, but also for clusters managers who manage clusters, plan their future development and define their goals.

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