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Key Factors for the Successful Operation of Clusters: The Case for Slovenia

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Background and Purpose: Companies are increasingly specializing and developing those key areas with which they can compete on the global market and are linking in clusters that are ingredient of territorial competitiveness. Clusters can play a competitive role in global value chains but once being successful, they may decline. For this reason, researching key factors for the successful operation of clusters in Slovenia is beneficial.
Methodology: This study is based on an extensive review of scientific literature. Theoretical findings are tested by a study of clustering in Slovenia. In practice, we determine the number of operating clusters fifteen years after they were initiated by the institutional environment with help of web pages, e-mails and telephone calls. Using interviews, we determine reasons for the cessation of operations on the part of former directors and factors of successful operations with directors of successful clusters.
Results: The institutional environment initiated start-up processes of creating clusters in Slovenia. After the termination of institutional financial support, Slovenian clusters, which have failed to develop their own financing system, ceased operation. Directors of still operating clusters confirmed that trust between cluster members is the most important success factor in the operation of clusters.
Conclusion: The institutional environment in Slovenia adopted cluster policy and successfully leveraged the establishment of clusters using start-up financing. Less than half of these clusters continue to prosper under their own stream after policy retreatment. Clusters were not prepared for a dramatically different way of working. Trust has become a major driving force of adjusting to new conditions.

Keywords: *network organizations, key success factors, clusters, Slovenia*

1. Introduction

Globalization is profoundly changing the business environment and leading company managers to face new challenges, as well as demands to analye and reevaluate the strategic directions of their companies and the methods and forms of their operations (Gajšek and Kovač, 2015; Kovač and Gajšek, 2014). Companies are finding that their knowledge, capabilities and other elements are often insufficient in developing their own competitive advantage. As the business environment continues to become increasingly competitive, companies and other organizations will establish and maintain their competitive edge not only by optimizing their own capacities, but also and especially with the ability to utilize the resources of other companies and their connectivity within a comprehensive business process (Sroka, Cygler and Gajdzik, 2014).

The need to integrate companies and bring together their potential arises from the demands of the global market to achieve price, time and quality competitveness. Individual companies cannot keep up with these demands alone. Companies are therefore becoming increasingly specialized and are developing those key areas with which

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they can compete on the global market. On the basis of these specializations, companies are integrating into network organizations (Milberg and Schuh, 2002, p. 21; Josserand, 2004, p. 3; Kieser and Walgenbach, 2010, p. 2; Bleicher, 2011, p. 56; Gassmann et al., 2014, p. 35; Oczkowska, 2015, p. 24).

Connectivity among individual companies does not only take place for the purpose of achieving competitive advantage on the basis of optimizing a process that creates added value. At the forefront are also demands to include the customer or user in the process of creating new value. The linear sequence of individual stages of the process to create added value is therefore increasingly shifting into an extensive vertical and horizonal network of interconnections among various companies, other organizations and individuals that collaborate in the entire added value chain (Prahalad and Ramaswamy, 2004, p. 96; Everett, 2011, p. 1). This allows competitors to develop mutual interconnections in individual areas of common interest and to shape a network connection in a narrow segment of the process to create new values (Gibbert and Durand, 2007, p. 3).

Different forms of connectivity among companies and other organizations that demonstrate the characteristics of networking have been familiar to us for a substantial period of time. However, over the last decade, network forms have gained new momentum (Gulati et al., 2000, p. 204; Kovač, 2001, p. 214). The aforementioned environmental factors as well as the development of information-communications technologies have contributed to a large expansion of different forms of networking among organized groups. There is also mutual interaction between demands of the environment – in the first place, demands placed on the market (market pull), which under the influence of globalization trends and structural changes and the possibilities of new information and communications technology (technology push), demand and enable companies and other organizations to establish new, more flexbile forms of network organizations (Rohde et al., 2001, p. 1; Steinmann and Schreyögg, 2005, p. 145; Rozman and Kovač, 2012, p. 264).

A well-known author in the field of business studies, Gomez had in 1992 already noted that network-organized companies and other organizations represent a new stage in the evolutionary development of the organization of companies and are bringing a renaissance to the field of organization theory (Gomez, 1992). Kelly (1998) has also defined the network organization as the dominant organizational form of the present and future. Since his writing, his prophetic thoughts have been confirmed. In the business environment, also in Slovenia, we are increasingly faced with different forms of network organizations and networking among organizations that have a tendency of constant expansion.

The basic characteristics of network organizations are the following (Winkler, 1998, p. 2; Vahs, 2005, p. 507; Gibbert and Durand, 2007, p. 172; Kieser and Walgenbach, 2010, p. 289; Bleicher, 2011, p. 322; Hatch, 2013, p. 283):

- represent a specific form of cooperation among organizations;
- the bearers of connectivity and cooperation can be very diverse: groups within organizations, organizations and/or groups of organizations;
- mutual coordination among individual bearers takes place with the help of hierarchical as well as market conditions;
- there is a mutual connection and common interest among bearers;
- trust represents an important element of coordination among the bearers of connectivity;
- organizations connect with one another both vertically and horizontally;
- participating organizations can be economically independent;
- an independent institutionalized organization form or simply an informal organization can be formed for the cooperation and operation of the network;
- information-communications technology represents an important element in networking and cooperation;
- complex mutual relations are established in various fields (information, human relations, technology, finance, etc.);
- there exist both dynamic and stable connections;
- the fundamental characteristics are: decentralization, diffusion of power and competence in decision-making.

Organizations can link due to very different goals and interests. This means that network connections can be found among profit as well as non-profit organizations.

Competitive clusters help cities, regions and countries to meet the socio-economic challenges of globalisation (European Commission, 2008). Therefore, they are an ingredient of territorial competitiveness. Studies and empirical evidence, while showing that clusters, once being successful, may decline. For this reason, researching key factors for the successful operation of clusters is beneficial.

Below, we first describe the theoretical background and state research questions. Answers are provided by literature review, case study and interviews with directors of Slovenian clusters. The aims of the literature review are to define the mechanism for the occurrence of clusters, collect basic data on established clusters and develop a ranking of key success factors for the operation of clusters.

2. Theoretical Background

One of the best known and widespread forms of network organizations are clusters. Their common feature is a regional network of connections. A feature of regional

network connections is geographical orientation and limitation (Kovač, 2011, p. 221). Strategic network organizations are often transnationally organized. Regional networks link small, medium and large companies with the aim of connecting resources and capabilities in a specific area of operation.

As a form of network connection among organizations, clusters have also been established in Slovenia. Within Slovenia, most clusters are networks among companies within a particular sector. There are, however, few regional clusters. This is also a consequence of the smallness of the Slovenian space and of trends in this field.

An accelerated establishment of clusters began over thirty years ago by connecting companies within individual geographical areas. In the nineties, clusters underwent new momentum and a real boom in development that extended beyond a regional form of networking. During his period, clusters became established in the areas of sectoral, multi-sectoral and regional integration. The most typical regional networks may be found in northern Italy (Emilia Romagna), southern France, America's Silicone Valley, etc. (Staehle, 1999, p. 746). Clusters drew on the findings and initial design of supply chains that had been established much earlier and that may also be classified in the group of non-capital contractual forms of networking among organizations (Kovač, 2011, p. 222).

The theoretical bases for understanding the functioning of clusters may be found in the earlier works of Marshall (1920) and in Early Theories of Agglomeration Economies (Felzensztein et. al., 2014, p. 838).

The concepts of co-partnerships, social elements of proximity, marketing and co-operation among industries are highly inter-related, as external economies or externalities – the economies of scale benefits derived from industrial location– are not confined to the company.

Substantially better known than Marhall's definition of clusters is the theoretical justification found in the works of Michael Porter. In his work, ″The Competitive Advantages of Nations″ (1990), Porter highlights the degree, level and stimulation of inter-company connections as an important element in achieving competitive advantage of the economies of individual countries. Even in his later works, Porter highlights regional clusters as a form of informally connected companies that link and work together while they also compete with one another (Porter, 1998). Both specialized suppliers and companies from particular fields, related institutions (agencies) engage in networking for the purpose of shaping competitive advantages that are difficult to replicate and are unique in their respective field of activity.

Individual authors define the term 'cluster' in different ways. From the various definitions, we can find the following common features of clusters (INNO Germany AG, 2010, p. 11):

- a geographical concentration of companies that are interconnected (Porter, 1998) by being a part of the same industry or supply chain, by a common resource or market, by a similar philosophy, by facing similar opportunities and challenges;
- a critical mass (Andersson et al., 2004, p. 28) of actors, resources, competences (in absolute terms - in relation to cluster competitors in other regions – but also in relation to other cluster candidates in the respective region) in order to sustain interaction between the cluster actors in the long term and to attract new members, and
- existing interaction *and* cooperation of companies (EC 2008). "These carry marked features of both competition and cooperation." (Andersson et al., 2004, p. 28).

As the authors note (Felzensztein et al., 2014, p. 838) - clusters provide general benefits to companies in relation to value chain inputs or aspects of production processes such as collective learning and resource leverage (Malmberg, Solvell, and Zander, 1996). While natural resource endowments are critical for regional development, the ability to add value within clusters in ways that produce superior results in international markets is even more significant (Perez-Aleman, 2005).

3. Research questions with argumentation

We stated research questions to guide and center research. Our goal was to answer on three research questions on the theoretical basis explained below and a review of documents that accompanied the development of clusters in Slovenia. First research question is as follow:

RQ1: How did the institutional environment influence on start-up processes of creating clusters in Slovenia.

Institutional theory researches the relationship between companies and the institutional environment in detail (Mihelčič, 2011, p. 146). It presupposes that a social framework of rules, values and expectations forms a significant component of the impact of the institutional environment on companies and their: organizational structure, role, acts or processes, and systems. The institutional environment can stimulate or inhibit a company's business activities. In any case, companies need to adapt to the institutional conditions in which they operate (Hatch, 2013, pp. 74-76).

With respect to clusters, we observe a widespread practice that the institutional environment establishes mechanisms to accelerate the processes of the formation of clusters. A similar process is dictated by theory. For example, Porter had stressed in his works (1990; 1998) the necessity of introducing appropriate institutional measures

to accelerate the development and operation of clusters in a given region. Thus, in the European Union (as an institution) and at the level of the member state, an intensive process of creating various institutional initiatives has taken place since 1990, in order to facilitate the processes of cluster creation (Jappe-Hienze et al., 2008; INNO Germany AG, 2010).

Today, clusters are rarely mentioned in Slovenian public and academic media. Their existence is not widely known to non-experts. We assume that their obscured and reduced operation is related to the termination of institutional financial support. To deepen the understanding of this phenomenon, the following research question has been stated:

RQ2: Did clusters, which have failed to develop their own financing system, after the termination of institutional financial support manage to provide another source of funding?

Literature mentions several success factors for the operation of the clusters. We would like to collect and classify them according to their importance. We assume that some of them are of greater importance than other. Perhaps the importance of specific success factor can even change when cluster reaches higher phase on lifecycle. We suppose that trust between cluster members is essential although it is a concept that is hard to observe and measure (Sroka, 2011). The third researched question is like follow:

RQ3: Which are the most important success factors for the operation of the cluster and how are ranked by importance?

Renowned researcher of clusters and faculty member of Michael E. Porter's Institute for Strategy and Competitiveness of Harvard Business School, Christian Ketels identifies the following four key factors:

- geographical proximity (regional), which enables the logical grouping of companies and the integration of their resources;
- "critical number" of cluster members;
- interaction (content complementarity) between cluster members in terms of the use of technology or market segments;
- willingness of cluster members to cooperate (Ketels, 2011; Porter and Ketels, 2009).

Lorleberg et al. (2010), Koschatzky (2012) and Meier zu Köcker (2012) also came to very similar conclusions about key factors in the successful operation of clusters. Based on these studies, we may conclude that there are additional success factors to the above four. These may be divided using a content analysis on internal and external success factors. For external factors, it is characteristic that cluster management does not have impact on them. External success factors are:

- institutional incentives,
- infrastructure development level,
- the availability of qualified personnel,
- market development level,
- competition,
- demand and similar.

Unlike external success factors, internal factors are subject to the influence of cluster management. Internal success factors are:

- development of a common vision and strategy,
- defining common areas of operation,
- designing organization and a common organizational culture,
- creating a common information infrastructure and similar.

However, in all the mentioned studies, we have traced that the establishment of a high degree of trust between cluster members is a prerequisite for the construction of all the mentioned factors (Lorleberg et al., 2010, p.28). Irrespective of how effective the strategy or IT infrastructure might be, without trust, the successful operation of clusters is in question

4. Methodology

In the empirical section, we explore the development of clusters in Slovenia and factors for their successful operation fifteen years after the establishment of the first Slovenian clusters. Researching clusters within Slovenia makes sense from the perspective that all observed clusters operate within the same institutional environment. The study was conducted in three stages, namely using a literature review, verification of the functioning of clusters and interviews.

Firstly, we examined literature on the development of clusters and their evaluation in Slovenia. The literature review is largely based on national sources of the Ministry of Economic Development and Technology of the Republic of Slovenia and the Slovenian Chamber of Commerce.

To answer on the second research question, the first phase was followed by checking on how many clusters are still operable after fifteen years. An inquiry was conducted with the help of clusters' websites, e-mails and phone calls. Internet and newspaper publications indicated that four clusters from sixteen did not function. Those four clusters did not response to our e-mails and phone calls. We recognized six additional inactive clusters. Former Managing Directors of those six clusters explained, by e-mail or phone, the reasons for the suspension of operations. They were not involved in interviews that followed with director of operational clusters. They provided only e-mail

responses on reasons for the suspension of operations. We interviewed five of six Managing Directors of successful Slovenian clusters that still operate. Interviews were based on structured questionnaire. Five interviews were conducted from April to October 2015. One interview could not be completed due to occupancy of the Director. The questionnaire for interview consists of four sections, with sub-questions. Section General data consists of nine open sub-questions about the cluster name, address, year of establishment, founders, registered activity, number of members, key factors for establishment, a cluster's legal status, revenue and growth rates, a strategic plan, number of employees in the cluster and number of employees in member organizations. The Section Organization and managerial process consists of four open sub-questions about the job title of the interviewee, a cluster's organization structure, a cluster's management and management processes. The Section Cluster's areas of operation and performance consists of one open sub-question about a cluster's business areas and their shares. The fourth section was divided to ten closed sub-questions. To interviewees were offered suggestions on success factors based on a theory and literature review. The strength or intensity of the interviewees' views about the importance of the proposed success factors were measured by a ten-step descriptive scale, namely: 1 - the least important, 10 - the most important.

5. Research Results

5.1 The Development of Clusters in Slovenia and the Results of Past Evaluations

The literature review is largely based on national sources of the Ministry of Economic Development and Technology of the Republic of Slovenia and the Slovenian Chamber of Commerce as initiators. The Ministry of the Economy began a project (mapping study) in 1999 aimed at defining a systematic approach to developing clusters within a project entitled 'Encouraging Company Linkage, Specialization in Production Chains and the Joint Development of International Markets under a Cluster System (Dermastia and Križnič, 2000; Dermastia, 2004). As reported by Jaklič (2003), one of the most important finding was that no "real" cluster actually existed in Slovenia at that time. Cooperation and networking among companies and between R&D institutions, support organisations and companies, was relatively weak. Despite this, some clustering of production and knowledge existed that could form the basis for cluster development. The existing linkages and networking indicated the existence of at least ten potential clusters.

In place of a uniform measure for encouraging cluster development, the Ministry of the Economy thereafter designed a cluster development programme comprising a broader set of measures. The programme was aimed at promoting the cluster concept, acquiring experience and strengthening cluster policy and was planned for implementation over the period 2000 to 2003. Given a lack of experience, knowledge and available instruments in starting up cluster development in practice, the Ministry of the Economy decided to launch pilot cluster development projects. In 2000, the Ministry issued its first call for proposals (UL RS 36-37/2000), inviting groups of at least ten companies and at least three supporting institutions (Blatnik, 2005) to qualify together as a potential cluster nucleus and to work on developing a cluster in conjunction with the Ministry. Cluster support was limited to three pilot projects in the field of the automotive industry, tooling industry and transport logistics (Table 1).

Clusters have been developed with the aim of achieving competitive advantage, higher efficiency, innovation, productivity and expediting commercialization of innovations. From the beginning, they had established formal structure, common vision and development objectives supported by all members. In 2002, the Ministry of the Economy (UL RS 28/2002) supported five additional clusters, representing the so-called second generation of the development of Slovenian clusters (Table 1). In addition to the previously mentioned, the Ministry of the Economy launched a third call for proposals (UL RS 8/2003) and supported the creation of an additional eight clusters, or a so-called third generation of Slovenian clusters (Table 1). Until 2004, 16 clusters actively operated in the Slovenian space (Jaklič, Svetina Cotič and Zagoršek, 2004; the Slovenian Chamber of Commerce, 2010). The Ministry provided 40 per cent of the costs of cluster start-up with the companies involved providing the remaining 60 percent.

The first evaluation in 2002 was based on three pilot projects (Jaklič, 2003). It was designed as a mid-term formative evaluation that would demonstrate how the process of clustering evolved, identify potential problems and analyse the business opportunities of clusters (Cotič Svetina, Jaklič and Zagorsek, 2004). At this time, it was still too early to measure the quantitative effects of clustering. The analysis revealed some problems in promoting the development of clusters or, more precisely, in simultaneously promoting cooperation and competition between cluster members. The observed low level of trust between cluster members seemed problematic. In addition, top management in certain companies was not sufficiently engaged in the process of cluster establishment.

Since the first evaluation was of significant importance for policy learning, the government, in 2004, decided to order an external evaluation of all measures promoting entrepreneurship and competitiveness between 2001 and 2003 (Deloitte, 2004). The mid-term evaluation analysis included 16 clusters supported by the government between 2001 and 2003. Clusters were in different development

Table 1: The First Slovenian Clusters and Governmental Co-financing

Cluster	Number of Employees as Cluster Members	Governmental Co-financing (in million EUR)
1. Generation – established in 2001		
Automotive Industry	1,670	0.6
Tool and Die Development Centre	17,162	
Transport Logistics	14,340	
2. Generation – Established in 2002		
High Technology Products Manufacturers	4,000	1.3
Air Conditioning, Heating, Cooling	3,100	
Plasttechnics Cluster	6,000	
Geodetic Service Providers	900	
Wood Industry	7,288	
3. Generation – Established in 2003		
eAliansa IT Cluster	200	2.6
Environmental Cluster	1,976	
Energy and Power	542	
Small Hotels	300	
District Energy Cluster	1,020	
Consulting Cluster	5,000	
Construction Cluster		
Innovative Textiles	3,000	
Total of 16 clusters with 66,498 employees		

Source: Dovč, 2004; Ministry of Economy, 2004, in Blatnik, 2005.

stages and each with its own development dynamics, which was reflected in the different methods of organization and functioning of each cluster (Jaklič, Svetina Cotič & Zagoršek, 2004). Direct comparisons on performance between clusters were consequently not meaningful. The evaluation design included a collection of secondary data (national statistics databases, cluster reports, articles), focus groups with different stakeholders (e.g. representatives of the Ministries, Regional Development Agencies, cluster managers, company representatives and academia), in-depth as well as structured interviews with cluster managers and structured interviews with company representatives. Three quarters of the clusters agreed that governmental initiative was crucial to cluster formation and nearly all companies planned to continue to actively participate in their cluster after the termination of government co-financing. Participants could already identify the benefits of clustering, mainly in terms of improved communication, increased knowledge transfer and also some quantifiable improvements in terms of increased sales, value-added and export. However, the majority of companies expected major benefits of clustering in the long run and estimated the benefits of clustering to outweigh the costs after six or more years. An insufficient level of trust among members remains one of the main obstacles to clustering. However, the level of trust seemed to be constantly increasing, which was reflected in an increasing number of joint projects, greater number of cluster actors and improved transfer of information. Other obstacles identified by cluster actors were a lack of financial and human resources, insufficient knowledge and skills in network management. The evaluation confirmed the results of the first study, which identified a lack of harmonisation between ministries and other institutions that should actively be involved in regional development.

The evaluation confirmed several success factors for the development of clusters, as listed from most to least important (Jaklič et al., 2004):

- building of trust among members,
- the presence of a conceptual leader in a cluster's de-

velopment process,
- support from top management in member companies,
- active participation of cluster members,
- creation of a joint development strategy,
- a successfully carried out initial joint project.

Among reasons for clustering, the possibility to obtain financial resources from Slovenia, as well from structural and other European funds, dominated.

In 2005, Blatnik (2005) explored success factors for the operation of the Slovenian Automotive Cluster from 2005 onwards. Interviewed cluster members stated the following success factors for further development of clusters, from most to least important (Blatnik, 2005):
- achieving synergies in the area of knowledge enhancement, joint purchasing and marketing,
- active and equal participation and consideration of the opinions of all members, irrespective of their size and strength,
- charismatic conceptual leader with clear vision, strategy and objectives,
- trust among members,
- as many as possible joint development projects with both long and short-term effects,
- financial independence from government incentives.

While financial independence was noted as a less important success factor, the source of financing clusters became a key question following 2005, the answer to which was provided by the continued functioning of numerous Slovenian clusters.

5.2 Factors for the Successful Operation of Slovenian Clusters

Ten years after Blatnik (2005) and fourteen years after the establishment of the first Slovenian cluster, we verified the significance of previous evaluations and, in theory, defined factors for successful operations of Slovenian clusters among five Managing Directors of six operating clusters, as listed in Table 2. The other ten non-operating clusters stated a lack of financial resources for the operation of the clusters as being the main reason for their disintegration.

For all clusters, a milestone event was the termination of funding by the institutional environment. After this governmental decision, the mutual trust, written strategies and objectives of cluster soundness were tested. At least six clusters were able to integrate globally and established external links (European Technology Platforms, related foreign clusters). Eventually, they successfully completed one or more applications to European Union projects and obtained the necessary funds to finance the establishment of an office and basic integrative activities. Project funding does not provide clusters with a stable source of financing. Membership fees range from only 5 to 20% of revenues. Continuously ensuring financing interferes with the primary purpose of clusters' operations and hinders long-term planning. Due to the crisis of the construction sector in Slovenia, contractors further noted that each cluster shares the fate of enterprises in their respective sector.

Most members are active in Shareholders Assemblies. Managing Directors recognized that joint R&D projects are of major priority because their quality performance has a positive impact on enhancing trust among members and raises their self-esteem.

Interviews with Managing Directors revealed that clusters each have their own development dynamics, as reflected in the different methods of the organization and functioning of each cluster. An effort to develop or participate in R&D projects is common to clusters. All Managing Directors confirmed that trust among cluster members is the most important factor for their successful operation (Table 3). On a ten-step descriptive scale, from 1 being the least important to 10 being most important, trust was assessed with a 10. According to the opinion of interviewees, trust is strongly connected with successful communication between members and an established partnership. The third most important success factor is a cluster manager with relevant competences. The Managing Director should be a charismatic person with a vision and knowledge of the situation in their respective sector. It is important that he/she approaches members with charisma and professionalism and that he/she is able to listen and motivate them. Excessive authoritativeness can be discouraged from cooperation. Other accessed success factors are listed by order of importance in Table 3.

If comparing ranking based on interviews with preceding evaluations as described above, several points may be noted. Jaklič et al. (2004) have observed that the first clusters in Slovenia most probably evolved due to institutional support. Without this support and without the institutional environment promoting clustering, their occurrence would be questionable. Reliable source of funding is essential at the start-up phase. Funds on one hand, and will and mutual trust on the other, proved to be a winning combination in 2001. For the further development of a cluster, denomination of charismatic leaders with relevant competencies was of great importance. If he/she received support from top managers in member companies, he or she could motivate all cluster members to participate in joint efforts to the benefit of all.

Blatnik (2005) continued to observe the Automotive Cluster of Slovenia for a number of years. Financial support from the institutional environment continued to exist and the cluster was nearly free of financial savings, although it strove to become financially independent. The most important success factor for this growing period were synergies in the area of knowledge enhancement, joint purchasing and marketing. By rank of importance, the success factor of trust among members slipped from second to

Table 2: Active Slovenian Clusters

Cluster	Number of Members	Legal Status	Income [EUR]	Activities	Number of Employees	Number of Employees in Member Organizations	Organization and Management
EIG Geodetic Service Providers	81	EIG	62,659[a]	promotion, organization of events, publication of articles, press conferences, participation on events, education, blogging, a group for legislation, projects, application ZPK 24 UR for fast access to data from Geodetic Administration	3	380	Management Board Council of Association Shareholders Assembly Supervisory Board
Wood Industry Cluster	105	Institute	400,000[b]	promotion, preparation/organization/coordination of projects and activities of common interest, supporting internationalization / transfer of knowledge, collaboration in EU projects, activities for strengthening a cluster's infrastructure and network	2	3,000	Council of Institute Expert Council
Automotive Cluster of Slovenia	59	EIG	350,000[d]	promotion and marketing, R&D projects (40% of all activities), optimization of supply chain, education and training, quality and business excellence	2	20,500	Shareholders Assembly Supervisory Board Programme Council
Construction Cluster Of Slovenia	11	EIG	200,000[b]	• generation of project ideas (5%), • consulting, searching for partners/calls and application preparation (10%), • organization/coordination of projects and activities of common interest and financial reporting (70%), • involving members in approved projects and protection of intellectual property rights (5%), • international networking and collaborating with foreign research and business alliances /associations (5%), • informing/education/consulting/transfer of knowledge and research results in business practice (5%)	3	150	Shareholders Assembly Management Board Supervisory Board
Toolmakers Cluster of Slovenia	31	Institute	100,000[c]	promotion, participation in events, preparation / organization / coordination of R&D projects, collaboration in EU projects	1 part-time	1,800	Council of Institute Council of Experts

EIG - Economic Interest Grouping,
[a] average income for the last five years; [b] income in 2014, 90% from projects; [c] income in 2015, 90% from projects; [d] 30% income from membership fees, 60% from EU projects.

Table 3: Factors for the successful operations of Slovenian clusters in 2015

Success Factor	Min	Max	Mean
Trust among members – a willingness to cooperate	10	10	10.0
Successful communication between members, partnership	9	10	9.8
Cluster manager with relevant competences	9	10	9.6
Critical mass of human resources with relevant competences	8	10	9.2
Establishment of external links (European Technology Platforms, related foreign clusters)	7	10	9.0
Institutional support (grants, start-up funds, policy support, entrepreneurship-friendly environment)	7	10	8.6
Cluster‘s organisational culture is aligned with members‘ organizational cultures	7	9	8.4
Information infrastructure (uniform software, website)	4	9	6.8
Clear division of roles of individual members	4	9	6.6
Organizational infrastructure (common procedures, organizational regulations, working methodology)	2	8	6.4

fourth place. The cluster had obviously already achieved a desired level of trust, so for the future, it set out intensive work on identifying synergies between members in order to be able to work as a homogenous whole. Financial independence from governmental incentives was not yet as important because grants were still available.

Today, trust among members is unquestionably the most important success factor. Institutional support is in the second place of ranking. Clusters would be overjoyed to receive any kind of institutional support and causally stabilize their operations, which are largely dependent on finances from all types of R&D projects and from only membership fees to a lesser extent.

6. Conclusion

The institutional environment in Slovenia adopted cluster policy and successfully leveraged cluster building with start-up financing. Past evaluations (Jaklič et al. 2004; Blatnik 2005) observed that the institutional environment has played the role of promoter, initiator and sponsor in the formation of Slovenian clusters. The phase of gaining independence proved painful for clusters, and for some, even fatal. Policies in the EU within individual member states, such as Germany, further confirm the importance of institutional environment in support of clusters. After 1990, institutional support for the process of creating clusters became established as the central mechanism underlying development policy (Meier zu Köcker, 2012). Research results show that the institutional environment initiated start-up processes of creating clusters in Slovenia.

From 2001 to 2003, 16 clusters were established in Slovenia. Less than half of clusters continue to prosper under their own stream following policy retreatment in 2004. Clusters were not prepared for the dramatically different way of working. Fifteen years later only six are still operational. Only those that were able to overcome traditional Slovenian mistrust and became financially independent from government incentives that have since dried up, were able to survive. Former Managing Directors of six inactive clusters explained the reasons for the suspension of operations. In all cases, the termination of financial support and the failure to find alternative sources were stated. We conclude that after the termination of institutional financial support in Slovenia, clusters, which have failed to develop their own financing system, ceased operation.

Fifteen years following the establishment of the first Slovenian cluster, we verified the significance of previous evaluations and, in theory, defined factors for the successful operations of Slovenian clusters between five Managing Directors of six operating clusters. Interviewees agreed that trust is the most important factor for the successful operation of clusters. Without trust, no common activities could be crowned with R&D projects. R&D projects bring financial resources needed for their operation. Lack of confidence in the start-up of clusters may be replaced by a stable source of funding. When funding ceases, trust takes a key role in operations and become a major driving force of adjustment to new conditions. Ketels (2011) and Porter and Ketels (2009) have come to very similar conclusions.

We focused on the factors of successful operations of clusters. Tested factors derivate from the results of evaluations of clustering in Slovenia that were generated between 2002 and 2005 and from a theoretical framework. We noted that observed clusters managed to become financially independent but that any termination in acquiring new R&D projects could cause instability in their operation or

even threaten their existence. Clusters would benefit from more attention and support on the part of the Slovenian and local communities, but have proven that they can also successfully function without this support. The management of clusters is also important factor for the successful operation of clusters, as defined by trust, partnership and a charismatic leader.

We assume that factors for the successful operation of clusters could vary according to individual phases of a cluster lifecycle. We propose this for future research.

Literature

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Ključni faktorji uspešnega delovanja grozdov: primer Slovenije

Uvod in namen: Podjetja se vse bolj specializirajo in razvijajo tista ključna področja, s katerimi lahko tekmujejo na globalnem trgu ter se povezujejo v grozde, ki so del regijske konkurenčnosti. Grozdi lahko kljub temu, da imajo konkurenčno vlogo v globalnih vrednostnih verigah in so uspešni, neprostovoljno prenehajo delovati. Ravno zato je preučevanje ključnih faktorjev za uspešno delovanje grozdov v Sloveniji pomembno.
Metode: Raziskava temelji na obsežni raziskavi znanstvene literature. Teoretične ugotovitve so primerjane z ugotovitvami raziskave poteka grozdenja v Sloveniji. S pomočjo spletnih strani, elektronske pošte in telefonskih klicev smo določili število še delujočih grozdov petnajst let po njihovi vzpostavitvi, inicirani s strani institucionalnega okolja. Z intervjuji smo določili razloge za prenehanje delovanja pri bivših direktorjih nedelujočih grozdov in faktorje uspešnega delovanja grozdov pri direktorjih delujočih grozdov.
Rezultati: Institucionalno okolje je iniciralo zagonske procese oblikovanja grozdov v Sloveniji. Po prenehanju institucionalne finančne podpore so tisti slovenski grozdi, ki niso uspeli razviti svojega sistema financiranja, prenehali z delovanjem. Direktorjih delujočih grozdov so potrdili, da je zaupanje med člani grozda najbolj pomemben faktor uspešnega delovanja grozdov.
Zaključek: Slovensko Institucionalno okolje je sprejelo politiko grozdenja in uspešno vzpodbudilo nastanek grozdov z zagonskim financiranjem. Manj kot polovica grozdov je nadaljevala svoje delovanje tudi po spremembi politike. Grozdi večinoma niso bili pripravljeni na dramatično spremembo v načinu financiranja. Zaupanje je postalo glavni gonilnik prilagajanja novim razmeram.

Ključne besede: *mrežne organizacije, ključni dejavniki uspeha, grozdi, Slovenija*