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## QUALITY MANAGEMENT OF CLUSTER INSTITUTIONAL DEVELOPMENT: NEW TRENDS AND THE BEST PRACTICES IN REGIONS OF THE WORLD AND RUSSIA

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**Abstract:** Analysis of the global practice shows versatile innovative tools of the regional cluster institutional development: in the field of functional institutions it's introduction of the cluster ambassador function into its functional framework, development of training programs for cluster managers and facilitators, elaboration of cluster cooperation patterns with the consumer community; in the field of framework institutions it's introduction of the regional open-government pattern, establishment of specialized body system, encouragement of cluster members' integration into business and social networks; in the field of regulatory strategic institutions it's introduction of the practice of collecting relevant data on clusters beyond industrial and statistical data, development of a special strategy for regional cluster development, promotion of intersectoral and interregional cluster initiatives; in the field of mental institutions it's a shifting focus of strategic developments from competitive advantages to collaborative ones of the region, including marketing, branding and cluster identity establishment.

**Keywords:** Regional cluster, Evolution, Competition, Stakeholders, Collaboration, Russian Cluster Observatory, Organisation for Economic Co-operation and Development, Asian Development Bank

### 1. Introduction

The best world practices of regional clusters' evolution clearly evidence that the impact of the spatial factor on clustering can hardly be overestimated.

A particular nature of the environment in numerous examples of successful cluster development in different countries of the world is obvious and has been extensively discussed in the field-specific literature. Therewith, the quality of the regional institutional environment is of crucial

importance, especially at the stage of genesis and early development of clusters. Arrangement of the main trends and the best practices (imitation patterns) in the field of regulatory policy, infrastructure institutions and institutional mechanisms of cluster development of the world regions and Russian leading ones (in this regard) will lay a scientific foundation for development of a system pattern of institutional support and encouragement of territorial innovation clusters in Russian regions.

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## 2. Literature review and methodology

International and regional practice of development and performance of different-type clusters is assessed in the works by researchers such as: (Al-Saleh, 2018; Balasubramaniam & Rengamani, 2018; Della Peruta et al., 2018; Gerritsen et al., 2019; Guha et al., 2019; Lan et al., 2019; Liu et al., 2018; Otsuka & Sonobe, 2018; Popkova et al., 2017; Popkova et al., 2018; Pozdnyakova et al., 2017; Sen & Ongsakul, 2018; Vanthillo et al., 2018; Xuejie, 2018; Zorin et al., 2016).

The information and empirical basis of the research became the data of the Russian Cluster Observatory, the Organisation for Economic Co-operation and Development, the Asian Development Bank, the US Cluster Mapping Project, and strategic documents of national and international regional administrations in the field of supporting cluster initiatives and projects, development programs of territorial innovation clusters, print media and the Internet materials containing empirical data on various issues of the regional economy cluster development.

Knowledge exchange and growth of innovational activity are noted as the key advantage of institutionalization of cluster development in economy in the work (Della Peruta et al., 2018). The necessity for consideration of internal and international production specialization during institutionalization of its cluster development is emphasized in the work (Shi & Chen, 2019).

In its turn, the necessity for considering the sectorial specifics of clusters for highly-effective management of the process of institutionalization of their development is emphasized in the work (Sigurðardóttir. & Steinthorsson, 2018). The publication (Vernay et al., 2018) points out the important role of state regulation in the process of institutionalization of cluster development of

the modern economy.

The performed overview of the existing research and publication on the selected topic showed that the institutional issues of cluster development of the modern economy are studied in detail in a lot of sources of the modern economic literature. At the same time, the problem of the influence of the process of institutionalization of cluster development on the quality of sectorial markets remains poorly studied and is not present in the existing literature sources. This problem requires further elaboration and is the subject of research in this paper.

## 3. Methodology

The research methodology is based on a combination of systemic, institutional and evolutionary approaches, including private general scientific methods of subject-object, factor, comparative, and function-structural modeling.

Empirical goals of the research predetermined the usage of regression analysis for determining the dependence of the quality of goods (6th pillar: Goods market efficiency), financial (8th pillar: Financial market development), and innovation (12th pillar: Innovation) markets according to “The Global Competitiveness Report” on the number of clusters in these markets in Russia, based on the Map of Clusters of Russia from the Russian Cluster Observatory. The time frame of the research is 2009-2018. The initial data are given in Table 1, and the results of the regression analysis are given in Tables 2-4.

The data from Table 2 show that quality of goods markets grows by 0.0066 point (i.e., remains almost unchanged) with growth of the number of clusters by 1.

The data of Table 3 show that quality of financial markets grows by 0.0063 points (i.e., remains almost unchanged) with growth of the number of clusters by 1.

**Table 1.** Dynamics of the number of goods, financial, and innovation markets in Russia and the number of clusters in them in 2009-2018.

Year	6th pillar: Goods market efficiency, points 1-7	Number of clusters in goods markets	8th pillar: Financial market development, points 1-7	Number of clusters in financial markets	12th pillar: Innovation, points 1-7	Number of clusters in innovation markets
	y <sub>1</sub>	x <sub>1</sub>	y <sub>2</sub>	x <sub>2</sub>	y <sub>3</sub>	x <sub>3</sub>
2009	3.7	14	3.3	6	3.4	3
2010	3.7	17	3.3	7	3.4	4
2011	3.7	21	3.3	10	3.3	5
2012	3.7	26	3.3	15	3.2	7
2013	3.8	34	3.4	18	3.1	10
2014	3.9	45	3.4	20	3.2	11
2015	4	67	3.4	21	3.3	14
2016	4.1	79	3.4	22	3.4	17
2017	4.1	83	3.4	24	3.4	19
2018	4.2	91	3.4	27	3.5	22

Source: compiled by the authors based on (Russian Cluster Observatory, 2019), (World Economic Forum, 2019).

**Table 2.** Regression analysis of the dependence of quality of goods markets on the number of clusters in them in Russia in 2009-2018.

<i>Regression statistics</i>						
Multiple R	0.9917					
R-square	0.9834					
Normed R-square	0.9813					
Standard error	0.0269					
Observations	10					
<i>Dispersion analysis</i>						
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>	
Regeression	1	0.3432	0.3432	474.4133	2.08182E-08	
Leftover	8	0.0058	0.0007			
Total	9	0.3490				
	<i>Coefficients</i>	<i>Standard error</i>	<i>t-statistics</i>	<i>R-Value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Y-crossing	3.5762	0.0167	213.7511	0.0000	3.5376	3.6148
x1	0.0066	0.0003	21.7810	0.0000	0.0059	0.0073

Source: calculated by the authors.

**Table 3.** Regression analysis of dependence of the quality of goods markets on the number of clusters in them in Russia in 2009-2018.

<i>Regression statistics</i>						
Multiple R	0.8895					
R-square	0.7911					
Normed R-square	0.7650					
Standard error	0.0250					
Observations	10					
Dispersion analysis						
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>	
Regression	1	0.0190	0.0190	30.3030	0.0006	
Leftover	8	0.0050	0.0006			
Total	9	0.0240				
	<i>Coefficients</i>	<i>Standard error</i>	<i>t-statistics</i>	<i>R-Value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Y-crossing	3.2524	0.0211	154.2328	0.0000	3.2038	3.3010
x2	0.0063	0.0011	5.5048	0.0006	0.0037	0.0090

Source: calculated by the authors.

**Table 4.** Regression analysis of the dependence of quality of goods markets on the number of clusters in them in Russia in 2009-2018.

<i>Regression statistics</i>						
Multiple R	0.3626					
R-square	0.1315					
Normed R-square	0.0230					
Standard error	0.1215					
Observations	10					
Dispersion analysis						
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>	
Regression analysis	1	0.0179	0.0179	1.2114	0.3031	
Leftover	8	0.1181	0.0148			
Total	9	0.1360				
	<i>Coefficients</i>	<i>Standard error</i>	<i>t-statistics</i>	<i>R-Value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Y-crossing	3.2447	0.0785	41.3479	0.0000	3.0637	3.4257
x3	0.0067	0.0061	1.1006	0.3031	-0.0074	0.0208

Source: calculated by the authors.

The data from Table 4 show that the number of innovation markets does not depend on the number of clusters in them, as significance F (0.3031) exceeds 0.05 and the determination

coefficient ( $R^2=0.1315$ ) is very small.

Therefore, the results of the performed analysis allow us to conclude that quality of sectorial markets in modern Russia is not

determined by cluster processes in them, which shows the presence of institutional problems. An attempt to solve these problems is made in this paper.

#### 4. Results

##### 4.1. Specific nature of the best clustering practices in the world cities and regions

At least three Asian countries (India, Bangladesh and Sri Lanka) extensively apply a cluster-based city economic development approach at the local level which is understood as the new model to achieve a sustainable territorial development by means

of focusing on cluster establishment (Choe & Roberts, 2011).

Such a practice differs from M. Porter's opinion according hereto "the economy of any region usually has a relatively small number of clusters in framework hereof the region is fully competitive in comparison with others" (Porter, 2017). However, a cluster-based approach seems to be more preferable due to its systemic nature, which means a dramatic change in the way of thinking of territorial administration associated with a shifting focus from comparative and competitive advantages to collaborative ones (Table 5).

**Table 5.** Kinds of specific characteristics for the advantages of the territory as an element of competitiveness here of

<i>Comparative advantages</i>	<i>Competitive advantages</i>	<i>Collaborative advantages</i>
Real estate prices and rental rates	Science and R&D	Business network
Infrastructure development	Technological development	development level
Taxation rate	Regulatory policy	Cluster progress
Remuneration rate	Labor productivity	Strategic alliance
Proximity to natural resources	Professional education	development
Transport infrastructure	development	Public-private partnership
development	Key functions of the region	expansion
Available funds	Population's standard of living	Business-government trust
Proximity to sales markets	Social capital of the territory	Open government
		Smart control systems

Source: made on the basis of the data (Choe & Roberts, 2011).

Competition between particular is becoming rare companies in the modern world. The confrontation of intercompany networks and alliances in the market on the contrary is the most common form of competition. The key advantage of the territories becomes not just a favorable economic and geographical location or conditions and resources of doing business, but opportunities created in the region to develop networks, partnerships, clusters and other forms of collaboration (or collaborative advantages of the territory). The concept hereof initially developed at the micro level, describing the attitude of companies but not the regions here they were based. From the standpoint of the cluster-based economic development the application hereof is unhindered at the local and regional

levels.

The composition of the territorial collaborative advantage elements is now presented as an aggregated preliminary set and requires special research. One of the important components of the collaborative advantages is the development of regional open government, which is understood as a territorial administration model based on cooperation of all stakeholders, data transparency and extensive stakeholders' participation in economic regulation, while the function of regional authority is mainly a coordination of stakeholder cooperation. In its turn, the development of smart territory management systems is related to introduction of information systems based on big data collection using a variety of sensors

to monitor water and energy consumption, road traffic (traffic jams), the integrity of water and power supply networks, etc. As a result, cities become entangled in some kind of “digital skin”, and their management takes a form of information systems administration.

As the Asian case shows, cluster-based economic development is associated with a number of issues. Firstly, experts recommend to pay special attention to the preliminary introduction of this approach, stakeholder training programs in particular (including both representatives of the business community and heads of local government departments), in the course hereof the participants attain a consistent idea of cluster-based approach importance, methods of introduction and expected results. Training programs could be added with discussion formats (round tables, workshops, etc.). Secondly, regional authorities should avoid the temptation to carry out single administration of the project; on the contrary, a project leader should be a business representative, and entrepreneurs in general should consider the introduction of a cluster-based approach as their own process implemented on their behalf. It is also important to involve leaders of local civil society, social entrepreneurs, civic activists; their non-taking into account may cause future project failures. However, one shouldn't exceed the number of participants in eventual clusters to avoid critical rise of the transaction expenses of their communications and relationships.

Cluster development case of Denmark has shown that the main feature of the regulatory policy in regard to cluster frameworks is flexibility that means:

Looking for a real balance between the bottom-up and top-down patterns of cluster development and elaboration;

Pushing the limits of industry and statistical analysis in cluster determining (many Danish clusters were based on value chains the boundaries hereof fall outside individual industries and were hardly-identifiable);

therefore, a regional cluster policy should be started with the collection of relevant information revealing the clusters (more precisely, their sources - protocluster networks) that are shadowed by common statistical reports manipulating data without regard to territorial aspect (concentration, location, distances, etc.);

Encouraging the integration of cluster members into both commercial and social networks; besides, social ones play a much more important role in the long-term sustainability of the cluster, since they contribute to the accumulation of cluster social capital.

The clustering case of Austria demonstrates the importance of marketing in cluster development. In Styria, the second largest region of Austria, marketing and PR were used from early development of the automotive cluster to attract new members, including foreign partners. As a result, the cluster's marketing activities have significantly affected the promotion of a region's brand in the European Union and outside it. According to Austrian experts, the marketing and PR functions should be inherent in all clusters within the country. Although the Danish experts emphasize that marketing and branding are the most appropriate tools for the final stage of regional cluster development, but hardly intended for early one. In our opinion, the Austrian approach is more preferable because it allows to prevent and avoid marketing mistakes at later stages of cluster evolution. It's not coincidence that a European study of business cluster best practices shows that 63 percent of respondents prioritize the goal of developing a cluster brand and the identity of its participants (for comparison, 58 percent - “innovations and R & D”, 36 percent - “attracting investments”, 34 percent - export orientation).

A comparative analysis of biotechnological clusters in Japan (Kobe and Shizuoka Prefecture), Germany (Munich and Heidelberg) and France (Strasbourg and

Lyon) made it possible to prove the following hypothesis: active promotion policy based on competitive selection of supported clusters and co-financing of cluster projects by the federal center and regions is positively associated with the development of clusters developed and elaborated by private business. The cluster development without public support at the national level imposes severe restrictions; in particular, such issues are also typical for the timber industry cluster in Styria (Austria).

The new generation of regional cluster strategies fundamentally rejects industry commitment and has a special nature. For example, surfing was chosen as a general topic for the development of San Sebastian (Spain); exactly surfing is a focus of topic-interrelated activities, including cuisine, hospitality industry, manufacture of specialized equipment, trainings, tourism, educational services, etc. Industry-specific cluster grows under particular lifestyle that requires the implementation of certain activities and the acquisition of relevant resources (goods and services). In this regard, the policy of developing an industry-specific cluster is much more complicated than one for industry (or multi-industry) clusters, since it requires the integration of various entities with offers from versatile and sometimes absolutely different industries as well as flexible regulation and marketing.

The total of surf-related businesses in San Sebastian is the activity system, the support of the cluster strategy, and “if operational efficiency is the achievement of perfection in I particular activities, then strategy is the right combination of these types” as well as provision of close interaction between the companies within the cluster and cluster-consumer community cooperation (surfer community). Promoting the cluster brand and forging the trust is supplemented herein by some extraordinary solutions. For example, a student competition for surfing innovations was launched to attract local universities to the cluster, which assumed team participation and end-user involvement: as a result, more

than 100 ideas were obtained and 18 of them were introduced into production.

In addition, Mondragon University has developed a six-week marketing and management training program in surf-business that is in stable demand. Marketing activity played a key role in the cluster success: firstly, the World Surf Cities Network was established by the San Sebastian cluster in partnership with another ten surf leader cities; secondly, the cluster offers and expands various forms of communications - a site, social media, conferences, various actions, etc.

However, industry-specific cluster policy shouldn't be opposed to industry or technology models as an unconditional alternative. Industry-specific clusters are a new trend that requires understanding and adjustment of the traditional approach. In particular, such clusters need a fundamentally different management based on a distributed leadership, when the leadership in different areas hereof belongs to different organizations and doesn't cause disputes between them.

Besides, the European CLOE-project case (inter-cluster network of cluster management cooperation founded in 2004) shows that industry-specific tools unnecessarily have to cover cluster activities in general; they may be selective. For example, network members hold regular workshops (interactive seminars) on specific topics related to cluster management and engage cluster representatives and experts from different EU countries. In course of the workshop scientists, experts and practitioners discuss various innovations and the best practices of cluster management, simultaneously forging unofficial contacts.

Different U.S. states pursue a quite specific cluster policy. For example, the cluster approach in Minnesota (like in particular Asian countries that was presented above) is considered as a framework for the entire economic policy. At first, the cluster approach was applied to solve one issue

(albeit a complex one) - development of business-demand knowledge and skills of labor force; gradually it became wide-spread in almost all areas of the state's economic policy, having turned into the basis of a regional development strategy. In this regard, the lessons learned by Minnesota authorities deserve special attention. It is important to develop a common language for the dialogue between regional leaders of government, business and civil society (the language means unambiguous terminology, identical ideas and expectations) to increase the role of training programs and discussions at the preliminary stage of cluster projects.

Minnesota cluster leaders proceed from the determination of key regional needs in the development of cluster programs; Thus, cluster activity is initially aimed at solving system problems of the region. Its institutional assets, the headquarters of large corporations in particular (attraction hereof should take special efforts) is of paramount importance for cluster success within the region. An important role in the preliminary activities on the elaboration of cluster strategy for state development was played by tool of primary data collection - CEO-to-CEO interview, which allowed to increase trust of the interviewed and provided viable data.

Oregon case shows a crucial importance of discussion platforms for stakeholders' communication and working out agreed plans and decisions. So, in the early 2000s Oregon Business Plan was established - an annual forum of experts, politicians and businessmen for state economic development policy. In periods between holding the forum, its organizing committee carries out interviews and focus groups and prepare specialized reviews on the basis hereof. Oregon has a regional cluster network (Oregon Industry Cluster Network), which includes representatives of business clusters developing within the state. Acting on behalf of cluster (not a private company), the participants of this network begin to interact not as competitors on the market but as partners. It is this form that makes regional

cluster development strategies feasible, within hereof the interests of various clusters need to be harmonized. In addition, it's easier for cluster networks to attract the attention of federal politicians and regulators as well as regional authorities. Besides, it was at this level that complex issues were raised and solved, which is impossible for individual clusters; in particular, it concerns training of skilled staff, regional marketing and branding, etc.

The case of Massachusetts high-precision manufacturing cluster shows that a private regional coordinating institution (for example, the Innovation Institute) can play an important role in the course of cluster establishment. It is this agency that distributed the funds of regional grants for certain start-ups (new companies) within the cluster, on the one hand, and fostered the leadership and cohesion of the cluster stakeholders, on the other hand. Thus, an indispensable condition for the support of new projects within the cluster was the participation of other cluster members as well as a positive influence on cluster competitiveness in general.

The main lessons of the Massachusetts industrial cluster represent a foundation of future best practices. They emphasize strengthening the cooperation intensity of the cluster internal stakeholders (to much greater extent than with other actors of the region); regional grant programs should be based on the true-to-life cluster needs; non-financial support of the cluster participants on the part of the intermediary institution should be of particular attention (Sheikin, 2017).

In South Carolina, a key role in cluster development was also played by a special body - State Council on Competitiveness. It was brand-named "New Carolina", which initially involved more than hundred representatives of small and large businesses, regional authorities, universities, and non-profit agencies. This body was founded in 2005, and in 2013 organization of a regional competitiveness network has already been



required, which included South Carolina clusters.

Thus, the state evolved from the stage of particular clusters' support to coordination of intercluster initiatives and cooperation. In addition, the case of this state shows the importance of balancing the short- and long-term goals of clusters (in particular, the very lack of clear long-term goals was one of the main reasons for the depression of the tourism cluster in South Carolina); the expediency of introducing paid positions of infrastructure (operating) staff, since the practice of engaging volunteers wasn't quite successful; the information on cluster activities, projects, participants, initiatives, and achievements should be continuously updated in active promotional mode and should be of the so-called unofficial storytelling nature. The need for a professional cluster secretariat is also confirmed by North Rhine-Westphalia region (Germany) case. These infrastructure bodies include 2-10 employees and perform a wide range of functions from maintaining

databases (on products, customers, partners, events, etc.) to arranging training, presentation and PR-activities.

The analysis of 33-cluster best cases from 23 EU countries showed that the professional cluster management is becoming increasingly important, and the training of appropriate specialists (their function is also called facilitator, i.e. intermediary in cooperation) is one of the key activities of regional development institutions. For example, in Serbia with more than 40 business clusters facilitators' education and training is an important function of the Cluster House (a specialized organization supporting cluster initiatives). Facilitator training program is based on an interdisciplinary approach (from project management to psychology and emotional intelligence), combination of theoretical and applied knowledge, and engagement of local and foreign expert.

*Both the functions and related skills of cluster facilitators differ depending on the stage of a particular cluster lifecycle (Table 6).*

**Table 6.** Changing the facilitator's role in course of a regional business cluster evolution

Facilitator characteristics	Eventual cluster	Growing cluster	Mature cluster
Functions	Engagement of new members Communication encouragement Network development Forging the trust Networking with authorities and partners Promotion of cluster idea	Local stakeholders' involvement Intensifying the cooperation and collaboration Enhancing the trust Business activity development Cluster brand development	Diversification or market evolution Inter-cluster cooperation Integration into global value chains International brand cluster development
Scope of expertise	Fundraising Event-management Lobbying	Relations management and marketing Branding Knowledge management Business initiatives and innovations promotion	Full-cycle innovation management Business-process integration Cluster re-engineering International branding

Source: made on the basis of the data (Ingstrup & Damgaard, 2013)

The inter-company division of labor within a cluster generates a system of organizational roles, from the standpoint hereof the cluster

can be understood as a meta-company, i.e., one uniting a number of companies that carry out particular interrelated activities. Using the

examples of the Spanish ceramics manufacturing cluster and the Danish biomedical cluster, we can determine the following key organizational roles:

- 1) Knowledge generators (companies and organizations committed to R&D, professional education and training, commercialization of innovations).
- 2) Facilitators (intermediaries in cooperation of cluster members and stakeholders), including GR-coordinators (special facilitators whose function is to forge and cement ties with public authorities and regulators of individual markets;
- 3) Clustrepeneurs (business companies within the cluster) that include four groups of actors: 1) manufacturing entrepreneurs whose activities are related to production of goods and their supply to sales markets; 2) service entrepreneurs whose business consists in provision and supply of ready-made solutions (from repair and IT-business to legal support, marketing and finance); 3) commercial entrepreneurs acting as intermediaries between manufacturers of goods and services, on the one hand, and sellers (wholesale and retail trade) or consumers, on the other hand; 4) social entrepreneurs fulfilling non-profit projects in social, cultural or environmental areas.
- 4) Marketing managers and sales agents whose functions are analysis of market gaps and opportunities for new business development within the cluster or launch of new goods/ services, on the one hand, and promotion of goods manufactured, branding, advertising and PR-activity, logistics and sales management, on the other hand.

- 5) Ambassadors are envoys outside the cluster promoting the idea hereof in the local community and on a wider scale as well as contributing to creation of cluster's positive image (Sheikin, 2017).

Experts believe that the most significant achievement in practical application of cluster ideas is integration of the cluster concept into regional policy. In most modern regions, this process is implemented under generalized name of smart specialization. The essence of this approach to regional innovation policy consists in the following points: the first is strengthening the priority supporting facilities that include high-tech complexes to solve major social problems (or meet big challenges) and clusters (inter-industry territorial communities of companies and organizations) within smart specialization; the second is recognizing an indispensability of clear interrelation between the capabilities of the regional scientific and technical complex and business actors/population needs, i.e., inclusive market direction of regional innovation policy; the third is complex nature of guiding determination of technological development major lines that requires involvement of stakeholders (interested groups) into strategic process and implementation of foresight forecasting (or essentially, expert designing of the most true-to-life scenarios to develop regional innovation system).

Internationalization and collaboration with foreign partners are often considered as a major line of regional cluster development. However, as global and national practice shows a gap commonly occurs between declared (often in a political sense) goals and glowing prospects, and true intensity of cluster support measures towards their internationalization.

As the analysis of the EU4SportsClusters project case showed, it is advisable to divide the best practices of cluster internationalization into two groups aimed at political actors (public decision-makers) and

regional cluster managers.

Recommendations for political actors include: inviting the management and cluster members to use internationalization as a strategic means of long-term competitiveness growth (which means a refusal from one-off or non-recurring international actions); encouraging cooperation between clusters of the same region within internationalization strategy (which decreases the average cluster costs and increases the scale of relevant activities thorough engagement of a great number of participants); giving impetuses for the development of inter-industry cluster collaboration and non-cluster companies that may have common attitudes to international actions and projects despite different business activities; promoting the cooperation between clusters of different regions; focus of regional development agencies on the continuous search for innovations in cluster internationalization and their prompt introduction into support practice of the region.

Further, the recommendations for cluster managers are as follows: managers should fully perform leading function, not being stuck in the role of cluster technical secretaries; cluster managers planning to enter foreign markets should have experience in delivering an international business strategies (preferably in respect to clusters); in the absence hereof it is advisable for cluster management to think about a new manager (or international project one); it's recommended for cluster managers to focus to a greater extent on the blue ocean strategy in the course of internalization, i.e., on the markets with higher capacity and low competition (but not on easily-accessible, already-developed, high-competitive markets); the development of the internationalization concept should be entrusted to external experts under active participation of the cluster manager and ongoing consultations with interested cluster members; according to the results of individual stages of the internationalization strategy or major international actions, one

should hold an open seminar or workshop for general public, including non-cluster companies, and actively share the acquired knowledge and contacts, initiating their integration into the cluster.

#### **4.2. Russian case of cluster initiatives support**

Let's us consider the best case of cluster development in Russia (insignificant at this moment), since the first measures on public support of cluster initiatives in the constituent entities of the Russian Federation begin only in 2012.

For the first time in Russia, a creative industrial cluster is being developed in the Tula region. On the territory of the Octava plant complex in the center of Tula, operation and production facilities will be disassembled and relocated; instead of it will be developed an educational structure (Higher Technical School under the auspices of Rostec State Corporation), co-working space (equipped framework for joint project activity), play technopark, machine-tool museum, hotel and other infrastructure facilities (Higher School of Economics, 2016). And if traditionally clusters in the industrial and creative sectors are contrasted, but here we are talking about their efficient synthesis.

The first interregional cluster in the Russian Federation is established on the basis of the Stavropol Territory and the Karachay-Cherkess Republic and is called National Aerosol Cluster (Higher School of Economics, 2016; Buyanova & Shiro, 2018). At the same time, national inter-cluster cooperation occurs with increasing frequency: for example, in 2017 instrument-engineering and IT-clusters of the Penza region entered into a trilateral agreement with local universities to enhance cooperation (Higher School of Economics, 2017); closer interregional cooperation is demonstrated by clusters of the Voronezh and Lipetsk regions, the Samara oblast and the Krasnoyarsk Territory. In Russia also appear the first mega-clusters, the winners of the major

project of the RF Ministry of Economic Development “Development of innovative clusters - leaders of world-class investment attractiveness” (2016) (Kazakov & Mitrofanova, 2018).

At the strategic session on the elaboration of a typical roadmap proposals for the development of innovative territorial clusters (April 2017), one put forward a number of institutional innovations that can be considered as possible modelling patterns. Among them are drawing a matrix of functions in the areas of cluster activities to align cluster initiatives and projects; establishment of specialized cluster organizations club for ongoing exchange of management experience by cluster managers and facilitators; drawing a national interactive map of free production facilities of cluster enterprises to intensify the search for joint project partners. However, to implement such initiatives regional clusters should become more visible in specialized information systems and federal databases created on voluntary information (Higher School of Economics, 2017). The ingenious practice

was approved in the framework of the “Innokam” Tatar cluster, designing cluster portal of orders and procurements; the main function hereof is to provide open information on suppliers, taking orders, notifying possible contractors and ensure communication of the parties.

A forward-looking organizational innovation is the establishment of a regional council on cluster policy under the governor of the Russian Federation constituent entity (an example could be the Council for the Development of the Siberian Science Police Cluster under the Governor of the Novosibirsk Region) (Higher School of Economics, 2017) in framework hereof the representatives of various stakeholder groups get the opportunities for ongoing communications and development of specific proposals to increase cluster performance.

## 5. Conclusion

Systematization of the best practices under analysis is presented in Table 7.

**Table 7.** Innovative practices of cluster institutional development in Russian and international regions

<i>The best innovative practices of cluster institutional development</i>	<i>Country (region) of location for reference regional clusters</i>
<i>Practice in the field of functional institutions</i>	
Introduction of cluster ambassador function into operational framework	Spain, Denmark
Development of learning and training programs for cluster managers and facilitators	Denmark, Serbia
Tight cooperation between the cluster and the consumer community	Spain (San Sebastian)
Introduction of a cluster portal of orders and procurements as online-transaction platform	The Russian Federation (Republic of Tatarstan)
<i>Practice in the field of framework institutions</i>	
Introduction of open government model	The European Union
Establishment of the Cluster Professional Secretariat	The USA (South Carolina), Germany (North Rhine-Westphalia)
Setting up an online forum of the regional cluster strategy	The USA (Oregon)
Developing a cluster regional network	The USA (Oregon, South Carolina)
Establishment of a private regional institute coordinating cluster development	The USA (Massachusetts)

**Table 7.** Innovative practices of cluster institutional development in Russian and international regions (continued)

Establishment of a special regional body on the cluster policy	The USA (South Carolina), the Russian Federation (Novosibirsk region)
Promoting the integration of cluster members into both commercial and social networks	Denmark
Development of inter-cluster cooperation network in the field of cluster management	The European Union
Purposeful formation of regional institutional assets (headquarters and branches of large business)	The USA (Minnesota)
<i>Practice in the field of regulatory institutions of controlling and strategizing</i>	
Collecting relevant information on clusters beyond industrial and statistical data	Denmark
Promotion innovation policy based on competitive selection of regional cluster initiatives	Japan (Kobe, Shizuoka), Germany (Munich, Heidelberg), France (Strasbourg, Lyon)
Stimulation of creative clusters	Russian Federation (Tula region)
Development the inter-regional clusters	Russian Federation (Stavropol Territory, Karachay-Cherkess Republic)
Elaboration of industry-specific cluster development strategy	Spain (San Sebastian)
<i>Mental institution practices</i>	
Using the approach of cluster-based economic development as a strategic thinking; shifting focus from competitive advantages to collaborative ones	India, Bangladesh, Sri Lanka
Marketing, branding and identity building, especially at the early stages of cluster development	Austria (Styria), Spain (San Sebastian), the USA (Minnesota)
Continuous PR-activity in the form of cluster storytelling	The USA (South Carolina)
Forging a common language for stakeholders' dialogue (agreed terminology, ideas and expectations)	The USA (Minnesota)

Surely, when introducing the best practices of cluster institutional development one should recognize that it's impossible to accurately simulate and reproduce any practice in other place and in other time. In this sense, such practices are mainly the elements of the region-specific model of cluster development. Thus, the results of the performed research allow for increase of effectiveness of quality management of cluster institutional development and could

be recommended for practical application in the regions of modern Russia and other countries of the world.

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