

# Innovation processes management and its efficiency for area development

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**Abstract.** Nowadays an industrial complex efficiency depends on many factors, but the essential condition here is an innovative activity of enterprises and regions. Only this innovative activity makes it possible to provide competitive advantages both at the national and at the world economy levels. To improve economic performance, it is necessary that economic entities operating in various spheres of industrial production intensify innovation activities to strengthen and develop their market positions. It should also be taken into account that this is a two-sided process, as, on the one hand, regional conditions influence realization of industry innovative potential, and, on the other hand, innovative processes influence effective area development. The paper aims to analyze the main innovative processes taking place in the region and to estimate the efficiency of clustering while using expert analysis and performance indicators of each cluster.

## 1 Introduction

According to official data, there are about 26 clusters in the Russian Federation. Yet, according to expert analysis of the Russian Cluster Observatory ISSEK HSE, at the beginning of 2016 there were more than 200 cluster initiatives starting to develop in the country. For clustering further development, the Cluster Map of Russia project was launched in September 2015. The project provides clusters with an opportunity to express themselves at the national level, opens access to existing practices of cluster development and management and helps them correlate with other clusters. In addition, clusters are ranked on the map on the level of their organizational development through a multi-step system of data entry. Thus, clusters can demonstrate a higher level of organizational development by adding new information.

The cluster model of economy was first introduced about forty years ago in the USA by Professor M. Porter [1]. Now, the problems of cluster development are dealt with by such Russian and foreign scientists as E. Birgman, E. Fizer, S. Rosenfild, L.M. Gokhberg, A.E. Shadrin and others. The United Nations Industrial Development Organization (UNIDO) considers clusters as an important element in economic development. It has developed recommendations and provided guidance for local governments and entrepreneurs specifying measures for implementation of the programs on cluster structures formation [2].

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## **2 Materials and methods**

Economic theory fundamental principles, scientific works of Russian and foreign scientists in the field of innovative development, results of various applied researches on industrial clusters formation and functioning serve as a methodological basis of the study.

These issues have been discussed in scientific papers of foreign authors [3, 4]. Russian scientists have also made their contribution [5-8].

At the moment, there are specific methods and approaches to assess objective laws and trends of area innovative development applied in economy. However, none of them can be considered universal to study the process in detail.

The authors used dialectical, system-functional, economic-statistical and formally-logical methods as a methodological basis for this work.

## **3 Results**

### **3.1 Analysis and assessment of the effectiveness of innovation processes management for area development**

Clustering of the economy of the region implies close interrelation of large, medium and small businesses to achieve high efficiency and positive results of innovation activity on the basis of diversification and modernization of industrial production [9]. According to the foreign experience, the cluster should include not less than 30-50 core companies for innovations potential development [10,11].

The basic clusters of the Samara region are automobile, aviation, petrochemical and IT-clusters. Potentially prospective clusters include agroindustrial, construction, tourist and recreational clusters, as well as a cluster of medical and pharmaceutical technologies and small aircraft and shipbuilding.

In the process of organizing a regional cluster, the following requirements and principles should be considered: social and economic interests harmonization; mutually beneficial innovation ensuring; certain industrial clusters integration; continuity of the added value chain; responsibility for reliability and stability of cluster relations; vertical cooperation and horizontal coordination; selective competition and cooperation; responsibility for the interchange quality; ensuring full awareness; motivations for creation and development [12]

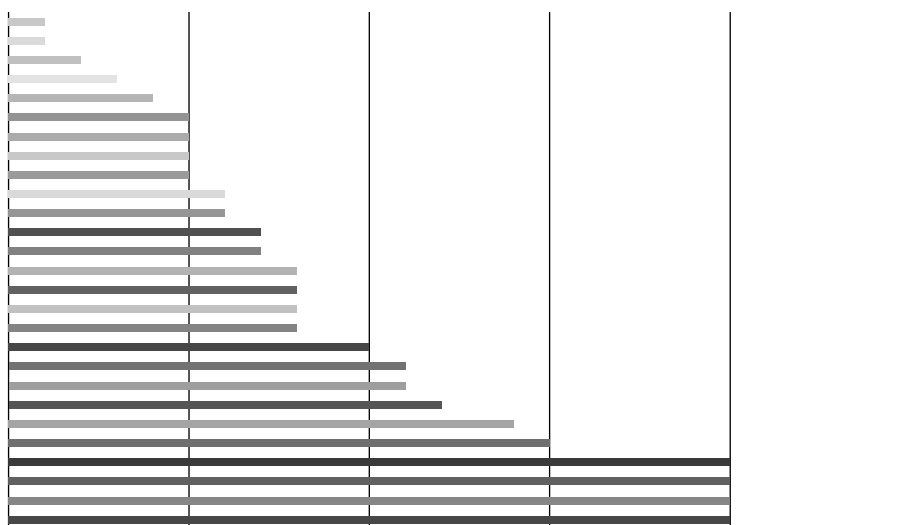
According to official sources, the state of each cluster can be described according to the following indicators: number of participants, number of employees and cluster turnover. These indicators are shown in Table 1.

The data analysis showed that the clusters given in the table have the greatest impact on the regional economy. The aerospace cluster is unique because the complete production cycle of aerospace technology is concentrated on the territory of one region. The development strategy of this cluster implies a significant increase in labour productivity (not less than twice before 2017), an increase in the share of the cluster in the world market (from 0.6 to 5% by 2017), the growth of the share of workers in small and medium enterprises (up to 30% by 2020). It should also be noted that most of the clusters in the Samara region are industrial, not innovative, but with a share of innovative end products. Let us compare clusters of the Samara region and the Russian Federation. To begin with, we'll consider the concentration coefficient, which shows the percentage of employees working in the cluster in the total number of Samara region work force and its relation to the average level cluster employees in Russia.

**Table 1.** Characteristics of clusters of the Samara region.

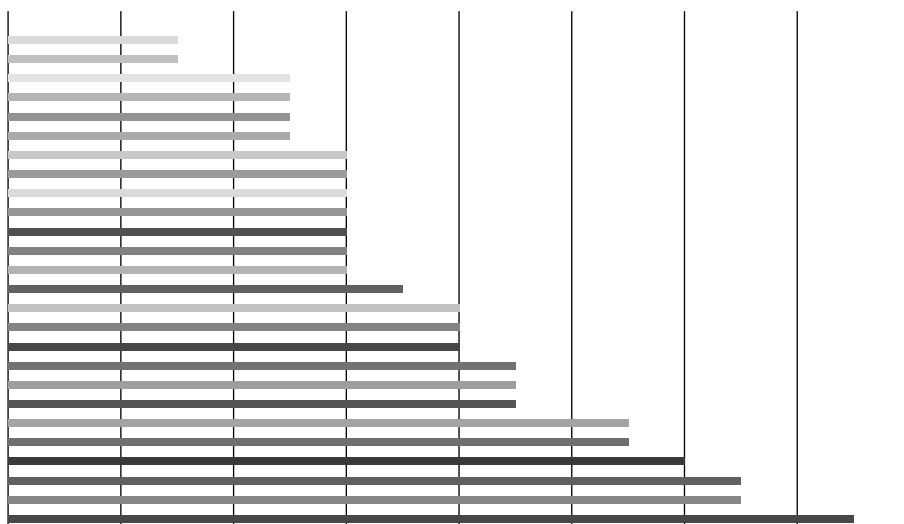
	Year of creation	Number of participants	Number of employees, thous. people	Turnover, bln. rub.
Automobile	2014	42	18	25
Aerospace	2012	9	38.9	48
IT Cluster	2013	More than 300	3	2.9
Oil	2014	69	16.3	95, 5
Medical and Pharmaceutical Technologies	2014	55	3.56	36
Agroindustrial	2014	450 large agricultural enterprises, 2.4 thous. farms, 900 food processing organizations and enterprises	632.1	83.2
Tourist and recreational	2014	400 travel agencies, more than 100 hotels, more than 40 sanatoriums, 122 recreation centers	42.2	40
Construction	2017	More than 300	113.1	17.6

Of the 27 potential clusters, 10 clusters have a concentration coefficient equal to or greater than one: automobile, refining, plastics and plastic products, aerospace, chemical, production equipment, electrical engineering, building materials, heavy engineering and oil and gas production (see Fig. 1).



**Fig. 1.** Coefficient of clusters concentration in the Samara region (Annex to the strategy of social and economic development of the Samara region for the period up to 2030).

Let us consider the indicators of relative productivity in the clusters of the Samara region. The labour productivity coefficient reflects the productivity ratio of the Samara region cluster to the middle value in Russia. Its analysis shows that most clusters in the Samara region have poor performance. Labor productivity is higher than the average indicator in Russia only in such clusters as power engineering, biopharmaceutical, building materials, transport and logistics, chemical, communication equipment. Thus, the traditional for the Samara region clusters - aerospace, automobile, oil refinery, plastics industry and plastic products have relatively low productivity (see Fig. 2).



**Fig. 2.** Productivity coefficient in clusters of the Samara region (Annex to the strategy of social and economic development of the Samara region for the period up to 2030).

Development and implementation of cluster initiatives, innovative clusters projects aimed at increasing competitiveness and interaction efficiency of the organizations - participants of clusters, formation of conditions for effective organizational development of innovative clusters is a priority task of the state. In order to ensure innovative development in the Samara region, the state program of the Samara region "Creation of favorable conditions for investment and innovation activity in the Samara region for 2014 -2018" is being implemented [13].

According to its subprogramme "Development of innovation activity in the Samara region", the regional budget should allocate 1144.701 mln. rub. for the program implementation.

The main funding amount (98.16%) was supplied in 2014-2015 year. Let us consider the interim results of this subprogramme for 2015 (see Table 2).

**Table 2.** The state subprogramme "Development of innovation activity in the Samara region", indicators values.

Indicator	Unit of measurement	Values of indicators of the state program		Percentage of completion %
		Plan	Fact	
Amount of of-budget and federal funds per 1 ruble of regional budget funds aimed at co-financing of innovative projects (K1)	Rub.	2.88	0	0.0

Number of activities carried out in the field of commercialization of the results of intellectual activity (K2)	Units	-	-	-
Number of startups (K3)	Units	18	14	77.8
Number of university students, trained in the system of commercialization of the results of intellectual activity (K4)	persons	11	14	127.3
Share of universities and centers of breakthrough research, which received support from the regional budget (K5)	%	100	100	100.0
Amount of of-budget and federal funds per 1 ruble of regional budget funds aimed at co-financing of innovative projects (K6)	Rub.	6.24	6.62	106.1
Budgetary provisions extent of the program coming from the regional budget	Million rub.	125.701	99.720	79.3

\*Compiled on the basis of the data supplied by the Ministry of Economic Development, investment and trade of the Samara region

Let us calculate the degree of the subprogramme completion during the reference period as a arithmetic value of the number of activities performed to the number of activities envisaged:

$$S = \frac{\sum_{i=1}^n K_{if} / K_{ipl}}{n} \times 100\% = 83,2\% \tag{1}$$

where n – number of development indicators, K<sub>if</sub> – the actual value of i-indicator, K<sub>ipl</sub> – the planned value of i-indicator.

Let us evaluate the effectiveness of the program implementation using the formula:

$$R = \frac{\frac{1}{n} \sum_{i=1}^n K_{if} / K_{ipl}}{\frac{F_f}{F_{pl}}} = 1,05 \tag{2}$$

where F<sub>f</sub> – the sum of the regional budget actual expenses for the subprogramme; F<sub>pl</sub> - the amount of the regional budget planned expenses for the subprogramme.

Analyzing the subtotals, it is possible to note that the main indicators of the state subprogramme "Development of innovation activity in the Samara region" were fulfilled by 83.2%. The calculation of the performance indicator of the subprogramme shows that the target indicators of innovation development are not achieved mainly due to insufficient funding of activities.

## 4 Discussion

For the successful functioning of clusters in the Samara region, it seems advisable to establish the Institute of Facilitators and Stakeholders, which will not only participate in the creation of the cluster, but also will carry out further successful group communication between all elements of the territorial cluster. The first phase of the Samara cluster design culminated in the creation of a cluster core, which includes automobile, aerospace, petrochemical and other industrial clusters. Now it is necessary to form significant auxiliary clusters. The second stage involves the design of the Association of Regional Cluster Management and the development

of rules and procedures for entering the regional cluster and rules of interaction between its members. In the third phase, it is necessary to analyze and monitor the functioning of clusters for adjustment and effectiveness assessment.

## 5 Conclusions

The research yielded the following conclusions:

1. The cluster model of economy is a territorial spatial form of the economic organization formed by a set of constantly interacting integrated independent firms working in one sphere or industry, which together create added value, and a group of enterprises that provides services to the main core businesses. The members of the cluster are also research organizations and specially created structures providing assistance in cluster development, as well as educational and financial institutions.

2. The Samara region was one of the first to implement cluster policy and create industrial clusters. Firstly, it ensures effective modernization of the industrial complex; and, secondly, it results in the formation of modern innovative form of industrial complexes and holds potential for area development.

3. There is a complex system of support for innovative activities established in the Samara region. Due to this the region receives high ratings on the Russian level. But, nevertheless, speaking about results of innovative activity development of all Samara organizations, it is possible to conclude that it does not work effectively enough.

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