

# The Assessment of the Prospects for the Creation of a Single Economic Site in the Territory of the Central Federal District in order to Develop Cluster Elements in the Field of Construction

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**Abstract.** The article describes the main approaches to the definition of clusters. The signs that form the clusters of the territory are clarified, this list is supplemented with the sign “intersectoral interaction”. The main methodical approaches to the calculation of clusters are also disclosed. In the research methods of the analysis, synthesis, grouping of data and also the cluster analysis were applied. The object of survey were the regions of the Central Federal District. Based on the calculation of localization coefficients, an analysis was made of the possibility of forming a construction cluster in the investigated district or the purpose of more efficient use of regional resources.

## 1 Introduction

Regional resource potential in the conditions of innovative and modernized processes, which are actively proceeding in modern Russian economy and also at artificial restriction of streams from the external environment because of sanctions influence, becomes an important base for deepening the historically developed specialization of territorial federal subjects.

In the conditions under which the total efficiency of regional resource potential use aspires to its maximum, the overflow of all types of resources has to increase, that promotes increase in their level of concentration, and it automatically leads to emergence localization or agglomeration effects. This approach is also supported by S.P. Zemtsov [1], noting in his

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work the positive effect of such phenomena on social, economic and innovative processes in the region.

Thus, the conclusion logically comes that in the case when localization of separate types of resources exceeds in indicator values over average throughout the country, the use efficiency of this element of resource potential is also above median value. However, the same sign is indirect evidence of formation of an economic cluster or its element (in case the cluster is interregional) in a certain territory, i.e. the cluster is the key to effective and rational use of regional resource potential.

## 2 Methodology

The theory of an economic territorial cluster is based on A. Marshall's [2] idea about the industrial area which he defined as "... the geographical system which is characterized by a large number of the firms functioning at various stages of production of a uniform product which main advantage is emergence of positive externalities".

Zh. Bekattini [3] supplemented this concept, having defined it as "... the social and territorial phenomenon which is characterized by simultaneous presence of people's community and populations of firms in natural and historically limited area".

At this point the unified concept of a cluster isn't created, moreover it is often equated to similar in manifestation forms, but absolutely by different in scope categories that is incorrect and often leads to substitution of concepts and distortion of essence of economic cluster per se [4].

At the modern economic school a number of concepts is considered among the most often given definitions. So, M. Porter gives the following concept: "... the economic cluster is a number of the branches connected through links between the buyer and the supplier or the supplier and the buyer or through general technologies, the general channels of purchases or distribution, or the general labor associations". In later works devoted to this subject he also marks the proximity of the companies and institutes interacting in a certain sphere, connected by communities and complementarities as a characteristic [5].

Among Russian economic scientists it is necessary to distinguish works of A.A. Migranyan who treats a cluster " as concentration of the most effective and interconnected types of economic activity, that is a group of the firms connected with each other, which form "golden ratio" of all economic system of the state which provides competitive positions in the national and world markets" [6].

T.V. Tsikhan defines a cluster "... as community of firms, closely related branches which are mutually promoting growth of competitiveness of each other" [7].

It should be noted that, despite the lack of a unified concept of an economic cluster, in a number of standard sources there is also this definition. So, for example, Methodical recommendations about realization of cluster policy in territorial subjects of the Russian Federation give the following definition: "... clusters – merging of enterprises, suppliers of equipment, accessories, specialized production and services, the research and educational organizations connected by the relations of proximity and functional dependence in the sphere of production and realization of goods and services. At the same time clusters can be placed in the territory of both one and several territorial subjects of the Russian Federation" [8].

From the definitions given follows that the main objective of cluster formation is promoting growth of competitiveness of the territory. At the same time it becomes possible to mark out several features which are integral characteristics of this economic category:

- proximity – all participants of an economic cluster are located within close distance that allows to reduce logistic expenses and a number of transaction costs;

- community of resource, technological and infrastructure base – as a rule, clusters include companies united on branch sign, therefore uniform material, technological and infrastructure bases promote growth of horizontal connections that is an integral part of growth of competitiveness;

- the innovation – this is a key feature because many categories, similar in definition, often treated as synonyms don't contain this characteristic. Innovation is a basis of competitiveness of any social and economic system which in many respects depends on the available resource capacity of the region and also on optimality and rationality of its use, therefore the elements entering a cluster by all means have to be interconnected by the community of innovative policy, research projects, flows of structured knowledge used by advanced technologies. Thus, clusters promote increase in innovative activity in the region;

- the internal competition – the competition between participants of cluster within the network structure;

- targeting at foreign market – as a rule, finished products made by enterprises, intend on external satisfaction, on the relation with a market cluster location;

- institutionality – creation and functioning of cluster associations is impossible without purposeful efforts and profound interaction from all institutes, both formal, and informal. So the American economists [9] draw a conclusion that success depends first of all on interaction of government institutions and representatives of private business, applied researches and developments which, in fact, represent a result of functioning of one of the most deficit and demanded resources of modern economy - the highly skilled worker with skills and knowledge inherent in him, i.e. the human capital which continuously interacts with other types of resources (material, financial, infrastructure, etc.). Thus, it becomes possible to claim that for prosperity of economy of the region an important role is played by existence of two systems: the effective system of interaction of all available resources and the system of attraction the missing resources from the outside. At the same time the systems of redistribution of these volumes have to function in the effective way inside regions as well, i.e. in them growth of economy is reached due to redistribution of resources between branches through a certain system of the prices [10].

In our opinion, it is necessary to mark out one more characteristic feature separately – interindustry interaction. Dr.Econ.Sci. V.B. Kondratyev also comes to a similar conclusion, he draws a conclusion about the existence of several mechanisms providing efficiency of regional systems: "... improvement of knowledge and investment strategies in resource branches; penetration of resource impulses into the descending segments of production chains and branches; creation of knowledge by means of innovative infrastructure" [11]. Thus effective use of regional resource potential on the basis of the clusters realizing territorial competitive advantages generated the interindustry impulses promoting more balanced economic growth of subjects.

Moreover, the similar mechanism of interaction is a base for long-term economic growth, the model has also found its description in V.B. Kondratyev's works [11]: "... providing sectors develop as the sectors solving problems of the existing resource branches and make a contribution to constant improvement and transformation. The opportunities developing in sectors of the first type as a result of this process, become the most important driving force for formation of new resource branches. On the other hand continuous interaction between the providing sectors and new resource branches creates a basis for the following cycle of formation of new branches".

Considering the made addition, in our opinion, it becomes possible to define an economic cluster as geographically close set of formal and informal economic institutes having unified resource, material and infrastructure base, united by the general innovative development vector of which functioning happens in the form of mutually beneficial

cooperation on the basis of interindustry cyclic interaction and the realizing historically created territorial competitive advantages in the most effective way.

Thus, making a conclusion to the above-stated researches, it becomes possible to claim that existence in the territory of the region of an economic cluster or its element allows to diagnose realization of competitive advantages of the subject by effective realization of resource potential.

Most authors, both domestic [12,13], and foreign [14, 15, 16], researching in the field of the cluster theory, distinguish two ways of forming these structures.

As a rule, one of them is natural which means formation of a cluster on the basis of "any" and "spontaneous" social and economic processes in a certain territory. This direction of formation of clusters is ideal for regional economy since it is initially based on competitive advantages of the particular territorial subject of the federation and considers the available regional resource potential and also the prospect of its development and realization. Among disadvantages of this process it is possible to note, firstly, the duration of such formation, secondly, complexity of development in adverse conditions of artificial restriction of growth of national economic system in view of sanctions influence that, in fact, brings to depressive currents at the regional and federal levels.

The second way of creation of clusters is the purposeful policy of regional and federal authorities which has to be carried out in close cooperation with representatives of the private capital and social institutes. It should be noted that such actions have to be based on results of preliminary careful analysis of resource capacity of the territory and creation of mechanisms of interindustry cooperation.

Thus, the cluster is considered and functions as an open social and economic system making the high-competitive products focused on foreign market by the most effective realization of regional resource potential.

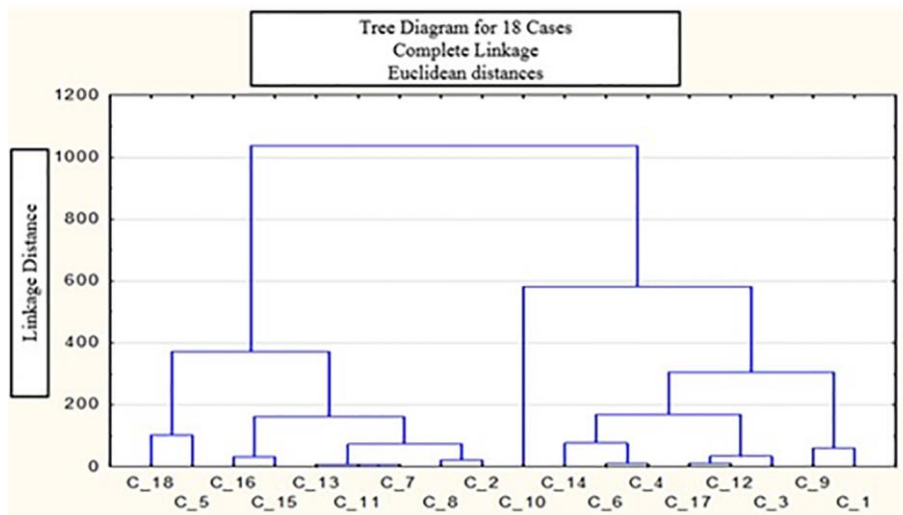
Definition of existence of clusters or fulfilling the main conditions for their creation in a certain territory can be carried out by such methods as a method of evaluation of groups of the interconnected economic spheres by means of interindustry balance [17]; method of structural shifts [18]; qualitative methods - expert estimates, poll of business representatives and representatives of authorities of the region.

One of the priority directions of development of the Russian Federation is creation of favorable social and economic conditions of life of the population. Turning to the theory of Maslow, one of the components of the basic level of satisfaction of needs is the need to provide the population with housing. In this regard, the creation of comfortable and affordable housing should be a key vector of the region's development strategy. This factor determines the need to improve the economic environment of construction organizations, contributing to their effective interaction.

In order to define the possibility of creating of the interregional constructional cluster in the central federal district of the Russian Federation the cluster analysis was made in this research with the help of the software product *Statistika*. As variables the authors put forward the set of regional terms: the share of construction organizations; the share of employed in construction; the contribution of the construction industry to the GRP; the share of investment in fixed assets in construction; the total entered floor area per 1000 people of the population; the share of innovative goods from the total volume of shipped goods, performed works and services; the innovative activity of enterprises. The calculations were based on the data of the Russian statistics agency Rosstat in 2016. The calculation results are presented in the figure 1.

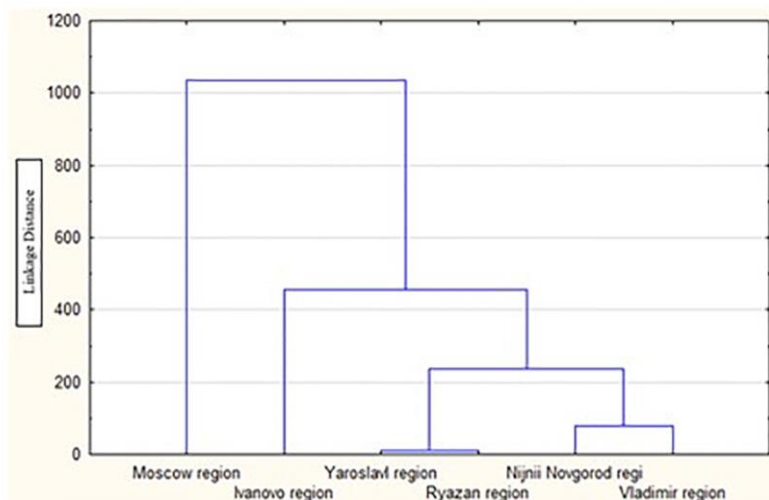
The figure 1 displays that the regions of two groups of the CFD are the most closely related trends in the development of these indicators. The first group includes Bryansk, Kostroma, Kursk, Oryol and Smolensk regions, the second one comprises Vladimir, Ryazan, Yaroslavl, Voronezh, Kaluga, Tambov regions. Assessing the proximity of the

geographic location of these regions one can logically combine such areas as Vladimir, Ryazan, Yaroslavl, Moscow and Ivanovo. But in this case we should take into account the impact of the development indicators of the nearby area – Nizhny Novgorod. Let us perform the cluster analysis of 6 areas located in the territorial proximity to Vladimir region (figure 2).



C_1	Belgorod region	C_7	Kostroma region	C_13	Smolensk region
C_2	Bryansk region	C_8	Kursk region	C_14	Tambov region
C_3	Vladimir region	C_9	Lipetsk region	C_15	Tver region
C_4	Voronezh region	C_10	Moscow region	C_16	Tula region
C_5	Ivanovo region	C_11	Oryol region	C_17	Yaroslavl region
C_6	Kaluga region	C_12	Ryazan region	C_18	Moscow

**Fig. 1.** Tree diagram of cluster analysis of the regions of Central Federal District



**Fig. 2.** Tree diagram of cluster analysis of 6 regions in construction sector

The results confirm the existence of a common model of development of Nizhny Novgorod, Vladimir, Ryazan and Yaroslavl regions, and the lack of it in Moscow and

Ivanovo regions. In this connection it is possible to talk of formation of construction cluster as a single economic space.

To confirm this assumption, we use the method based on calculation of coefficients of localization or other indicators of concentration of the employed population, release or the number of the existing enterprises in a certain territory, i.e. a method of allocation of significant cluster groups will be applied. Cluster group is a set of the traded kinds of activity which show a steady tendency to joint localization [19].

$$LQ = \frac{Emp_{ig}}{Emp_g} / \frac{Emp_i}{Emp} \quad (1)$$

where  $LQ$  – localization quotient;

$Emp_{ig}$  – number of employees in the industry  $i$  in the region  $g$ ;

$Emp_g$  – full quantity of employees in the region  $g$ ;

$Emp_i$  – full quantity of employees in the industry  $i$ ;

$Emp$  – full quantity of employees.

Location quotients calculated on employment of population in the sphere of construction in 2016 reflect a sufficient concentration of labour resources in Belgorod ( $LQ=0,84$ ), Vladimir ( $LQ=1,1$ ), Kaluga ( $LQ=1,14$ ), Ryazan( $LQ=1,19$ ), Yaroslavl( $LQ=1,1$ ) and Nizhny Novgorod ( $LQ=1,14$ )regions and in the city of Moscow ( $LQ=1,59$ ). We should mention that Kaluga and Belgorod regions are very similar in the above indicators but however, they are geographically located at a considerable distance, have no common borders and can not be united into a single economic space with Nizhny Novgorod, Vladimir, Ryazan and Yaroslavl regions in the field of construction.

Thus it is possible to conclude that creation of a construction interregional cluster of Nizhny Novgorod, Vladimir, Ryazan, and Yaroslavl regions will significantly promote

- enterprise productivity growth increasing thereby competitiveness creating economies of scale,
- development of innovative activity of regions,
- improvement of the quality of construction products,
- contribution to solving social problems,
- increase of the overall level of use of the region's resource potential.

### 3 Conclusion

Summing up the result it is necessary to emphasize, once again, that one of the most effective ways of fulfilling regional resource potential is its complex use on the basis of the organization of an economic cluster which, in turn, is a basis for long-term economic growth of the territory.

Now a significant number of clusters determination methods is created. However it should be noted that these methods aren't universal and estimate rather a performance of conditions for formation of an economic cluster in a certain territory. I.e. they don't give the answer about existence or lack of a cluster, but only about expediency of his formation in this analyzed subject. Thus existence of economic conditions for formation of a cluster demonstrates more effective and rational use of regional resource potential through accumulation and use of separate types of the resources, which are a competitive advantage of this or that subject.

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