



# Research Journal of Pharmaceutical, Biological and Chemical Sciences

## On The Prospects of Agro-Industrial Clusters Formation.

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### ABSTRACT

This paper presents the issues of formation of the agro-industrial clusters as a method of restoring the manageability of the integrated development of the agricultural sector in different regions and improvement of the system of production communication between the economic entities within the agro-food complex. The classification of cluster within the agricultural sector is represented, the specifics of the agro-industrial clusters formation is described. The conclusion on the clusters prospects as a form of the agro-industrial integration development is drawn.

**Keywords:** economic cluster, agro-industrial cluster, product cluster, agro-food complex, agro-industrial integration.

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## INTRODUCTION

Transformation of the economic mechanism of the society that took place in Russia in the course of the radical reforms in the end of the last century determined the necessity of formation of the reasonable social production management system. Transition to market economy and refusal from the rigid centralized control over the reproduction process resulted in the industry disintegration and destruction of the cross-industry complexes as the units controlled by the government. The action of the free market preconditioned the actual collapse of the agro-industrial complex as an integration framework combining all the items of the agro-industrial production system and its infrastructural provision. Certain alternative to the product AIC-subcomplexes is represented by the incipient structures of the cluster type where the role of the integrator of the production and economic interaction between the business entities is performed not by the state but by the large business structures. In the context of the transitive economy it is highly important to ensure the integrated development of the separate areas and industries. In this regard the issues of restoring the manageability of the agro-food complex on the basis of the cluster structures formation особую актуальность become especially topical. In order to evaluate the prospects for development of the agro-industrial clusters in the Russian economy it is needed to reveal the essence of the economic clusters, objective preconditions of their origination, to investigate the possible forms of the agricultural cluster structures, to define the specifics of development and operation of the agro-industrial clusters.

## MAIN PART

The concept of the specialized local manufacturing content as a factor of providing the competitive advantages of the space production structure was substantiated by A. Marshall in his research "Principles of economics" [[1]]. From among the main parameters determining the availability and economic efficiency of the agglomeration processes he singled out the transportation costs relating to the material delivery to the integrating enterprises.

The first one who pointed to the formation in the social production of the developed countries of the new economic patterns was M. Porter [[2]], he suggested to consider the combination "of the neighboring inter-related companies and the associated organizations acting within a certain area and featuring common activities while being complementary" as a cluster. He introduced into the scientific use the term "business cluster" and defined it as a "geographically concentrated aggregation of the inter-related and complementary companies of a certain industry including along with the manufacturing companies the service providers, suppliers of the raw material, components and equipment, companies engaged in the related industries as well as the associated institutions (for example, universities, standards agencies, trading associations). These companies are competitors yet they are inter-related due to the cooperation ties". He also used the term "economic agglomeration" for designation of an economic cluster".

By definition of the United Nations Industrial Development Organization "Clusters are the industrial and geographical concentrations of the companies producing and selling a wide range of the inter-related or complementary products and, therefore, featuring the common problems and opportunities for development. These concentrations may unite the production companies, suppliers of raw material and capital stock, companies providing specific services on the engineering, managerial and financial issues". [[3]]

Generally speaking, the cluster theory is focused on the relations and interrelations between the members of the chain of values appearing within the manufacturing process and falls beyond the scope of the traditional flat organization within separate industries. The cluster approach allows not only determining the potential economic clusters participants but also justifying the most efficient form of interaction between them. The territorial concentration and presence of the informal ties between the economic entities determine the required flexibility and efficiency of operation of the cluster-type structures. Within the scientific understanding the cluster approach represents a brand-new method of economic system structuring since it suggests, firstly, consideration of the strategic group of the complementary enterprises belonging to the different industries but concentrated within a restricted area; secondly, studying the development and promotion of this group of the economic entities within the basic industrial and complementary segments; thirdly, consolidation of interests of the competitive companies, development of the horizontal integration for concentration of the efforts aimed at crossing the common barriers on their development path; fourthly, formation of private-public partnership for implementation of the joint projects on the development of the

areas controlled by the economic cluster entities; fifthly, transformation of a part of the regional economic pattern within the frameworks of formation of a product cluster restricted by the territorial, manufacturing and institutional limits; sixthly, shrinkage of the existing imbalances in the industrial, manufacturing and reproduction pattern of the regional economy; a faster response of the cluster-type structures to the change of the operating conditions, change of emphasis in terms of development and appearance of the new technologies; seventhly, enhancement of the multiplicative effect due to the improved balance of the cluster units interests, increase in the information exchange efficiency, providing access to innovations.

One should also mention the methodological approach to the study of a cluster as a special form of the economic system organization suggested by G. B. Kleiner, R. M. Kachalov, N. B. Nagrudnaya [[4]]. According to these researchers, a cluster represents a prominent example of a multifunctional and multiple-aspect system. At any specific time a cluster can be considered as a territorially-restricted system, i. e., as an object. Presence of the stable channels of communication between the participants, introduction to the cluster of the infrastructural patterns attach the features of a system of environmental kind. The institutional environment of a cluster is its factor of the sustainable growth. Since formation of an economic cluster occurs evolutionarily under the action of the innovative impulses the cluster gains the features of the process-type systems. At the same time, during the initial period of its existence a cluster can also be considered as a project since the cluster creation is similar to the project implementation and its content and compositions may vary in the course of its development.

According to their inherent essence the clusters are similar to the integrated structures. Economic integration has travelled a long way of its evolutionary development beginning with the establishment of cartels and ending with consortiums, holding companies and financial industrial groups. And a cluster, according to V. V. Mitenev, O. B. Kirik [[5]], at the present stage is the highest level of integration the purpose of which is establishment of the industrial basis for competitive growth, higher performance and economic growth of business.

A considerable part of the Russian researchers believe that the two basis approaches to the cluster formation may be distinguished. The first approach is based on the self-organization of the economic operators within the free market mechanisms and does not suggest the direct government intervention or support. The second approach which is often called the “competitiveness poles” developed from the middle of the first decade of the present century is based on the partnership between the business entities and federal and regional authorities.

T. V. Tsichan [[6]] points out that as of today the experts have described the seven main cluster features determining the choice of the cluster strategy: geographic one (design of the spatial clusters from the regional to the genuinely global ones); horizontal (flat) (a few industries may be included into an cross-industry cluster); vertical (the cluster combines the related stages of the manufacturing process); lateral (a cluster includes different sectors that may ensure economies due to their scale); technological (a whole of industries applying the same technologies); focus (a cluster of the companies concentrated around one center); qualitative (the main objective of which is not integration itself but the growth of the partnership relations level and quality).

According to A. Looyen and V. Heijmann [[7]], the economic clusters may be divided into five types by the specifics of development:

- Resource-determined clusters originating from the regions that are provided with the production factors more than the neighboring regions: soil of a higher quality, mineral, natural resources, manpower, etc.
- Techno-clusters are made by the companies focused on the high technologies. Exchange of information and knowledge is of high importance to such clusters, that’s why they are formed around universities and research centers.
- Historically-developed “know-how” clusters are formed on the territories where particular technologies (for example, managerial or financial ones) represent the outcome of the years-long innovative activities of the former entrepreneur generations. Such clusters include, for example, the London City being the largest world financial and business center.

- Clusters with low-cost production. These include clusters originating from the territories with the low-cost manufacturing resources (as a rule, manpower). A great number of such clusters has been formed in the emerging market countries.
- Information services clusters. They are much similar to the previous group; the main products here are the low-cost IT-services.

The agro-industrial product cluster represents a specific form of agro-industrial integration. A cluster as an informal economic system does not have features of a legal entity which determines the specifics of the cluster formation management to a large extent. This is why the cluster approach is considered as a new management technology enabling it through coordination of operation of the economically interrelated enterprises and ensuring balance of interests of all the members of the technological chain to increase the competitiveness of the manufactured products, to lay the groundwork for the efficiency growth and sustainable development of the all cluster structural units.

According to S I. Gryadov and I. V. Kovalyova [[8]], the agro-industrial cluster in terms of the product industrial sub-complex shall be interpreted as the process of aggregating the companies of different areas of activity within a single reproduction cycle from the primary production to sale of the finished products including all the manufacturing stages which should result in the synergistic effect. The key requirements to the synergistic results of integration – shrinkage of the transaction costs, enhancement of the competitive advantages.

As a rule, the cluster organization is performed within the implementation of one of the three directions of strategic development of the integrating enterprise: production, assortment strategy and extension of the economic area under control. In case of orientation on development of the production cluster component the emphasis is made on the modernization of infrastructure of all the cluster entities within a unified technology policy under control and with direct involvement of the integrating enterprise. In case of changing the cluster assortment policy in terms of its finished products the mechanism of stimulating the production of the new crop species is engaged. The strategy of extension of the controlled economic area is implemented through the system of measures on expansion of the cluster range for the purpose of integration of the processing enterprise with the new raw material suppliers.

In addition, it should be noted that the food clusters do not have the distinct territorial boundaries of the economic area under their control but the cluster core usually gravitates toward the regions of location of the integrating enterprises.

E. Galves Nogales [[9]] introduces the following agro-clusters classification.

- Clusters of the “one village – one product” type. Usually they are rather small and focused on promotion of the *Spezialität* products at the domestic and international market.
- Agro business clusters include the clusters united within the vertical integration suggesting manufacturing of a particular kind of products. As a rule, they include only product manufacturing and processing.
- Agro-food clusters formed on the basis of the agro-industrial parks providing to the manufacturers of the agricultural products the services on processing, transportation, storage, etc. Usually they are formed in the regions where a lot of small and medium agricultural producers are located.
- Agro-export clusters are formed in the regions where the export products are primarily manufactured; they enable batching of the large amount of export products which are usually controlled by their geographic location. These clusters include the logistic companies as well as companies providing financial, taxation, consulting services, etc.
- Subnational innovative clusters. The cluster core is located in the region – innovation accelerator including research centers, educational institutions promoting the innovative technologies and performing training of the highly-qualified specialists. As a rule, the central region has the relevant production capacities though they may be located in the neighboring regions.

For the purpose of identification of the agricultural clusters M. Schouten [[10]] suggests using the Location Quotient Ratio, *LQ*:

$$LQ = \frac{E_{ij} / E_i}{E_j / E}$$

where  $E_{ij}$  is the number of those employed in the  $i$ -th industry of the  $j$ -th region;

$E_i$  is the number of those employed in the  $i$ -th industry within the country;

$E_j$  is the number of those employed in the  $j$ -th region;

$E$  is the number of those employed in the country.

If  $LQ > 1$  it can be stated that in the region there is the cluster of the relevant industry.

The key difference of the agro-industrial food clusters from the similar industrial clusters consists in the level of specialization of the first-level economic entities related to the production of the fresh raw material for output of the cluster finished products. The vast majority of the Russian agricultural enterprises are the multi-sectoral which raises certain difficulties of their entry to one or another food cluster (or to several clusters simultaneously). However, the multi-industry nature of the agricultural enterprises cannot be classified as the factor restricting the prospects for formation of the agro-industrial food clusters since the agricultural producers have traditionally integrated with the various processing companies.

To a large extent the boundaries of the regional food clusters obviously are the same as the raw material areas of the processing companies and the economic area under control is determined by their role in the regional economy. It is this factor that will define the priority of inclusion of the agricultural producers into one or another cluster. For each economic entity the cluster management bodies will substantiate the level of the production potential in terms of the agricultural products and propose a list of measures on stimulation of production of the required crops or rearing of the required livestock species (supply of seeds, fertilizers, crop and livestock protection agents, foodstuff and supplementary feeds, oil products, etc. on attractive terms).

#### SUMMARY

Development of the regional economic structures of a cluster type formed at the private sector initiative establishes favorable prerequisites for enhanced sustainable growth of the agricultural areas, advanced social responsibility of the business entities and formation of the efficient system of the private-public partnership.

#### CONCLUSIONS

The agro-industrial clusters are the promising form of development of the integrative relations. The experience of the countries featuring the developed functional and territorial economic clusters shows that a cluster in terms of its inherent essence cannot be established with the use of the administrative method. The clusters are formed only in presence of the objective prerequisites determining the economic efficiency of deepening of the economic ties between the enterprises of the related industries and formation of the common production and information infrastructure. The clusters belong to the "soft" forms of integration upon the use of which the organizational and functional structure of the integration units remains unchanged but the processes of joint operation produce the synergetic effects that are favorable for development both of the separate industries and regions.

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