

# Issues of competitiveness and results of clustering of the cotton sector entities in Uzbekistan: a review

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**Abstract.** This paper discusses the theoretical issues and principles of the formation of agro-clusters and trends in the development of this system in the cotton and textile industry of the Republic of Uzbekistan, its features and advantages. Effective application and existence of business clusters is considered on the platform of categorical-system methodology in the framework of such aspects as structural, functional, target, and evolutionary.

## 1 Introduction

In the context of the formation of a competitive, innovative and smart agricultural economy of the Republic of Uzbekistan, achieving sustainable development of the industry, using the resource potential with maximum return, is a priority economic policy of the state aimed at creating a competitive industry and ensuring food security, improving the level and quality of life of the rural population, rational use natural resources [1, 6].

Monitoring of the functioning, as well as the economic assessment of the activities of the agricultural market subjects, indicates that the ongoing institutional reforms in agriculture of Uzbekistan did not give the expected results, as a result of which farms did not acquire economic stability and their material and technical equipment did not strengthen. In this connection, in order to improve the situation in agriculture, the next step has been taken, the creation of agricultural clusters on the principles of ensuring intersectoral interest [6, 7]. Therefore, in many countries of the world, and especially in the countries of the post-Soviet period, agro-clusters are considered as a special structure in ensuring the stability of the agricultural sector and creating balanced sectoral (intersectoral) and territorial integrated ties [2].

The functioning of integrated structures in the economy, including the agro-industrial complex in a market economy, generates a significant number of problems that have both methodological and applied significance [2, 3]. In this case, clusters should contribute to the implementation of technological progress and the formation of agribusiness aimed at interaction, they contribute to the diffusion of innovations at all stages of production, lead

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to a balance in the effectiveness of the subjects of the agro-industrial market and reduce costs [3]. The agro-industrial cluster should fulfill the function of the main tool for program-targeted planning and management within the framework of regional policy, and allows the complex use of the economic and social components of the region. The main elements of the agro-industrial cluster at the regional level are subordinate centers (cores) [3, 4]. The economic core of the agro-cluster is usually represented by a large industrial enterprise, which, in the process of production activities, has proven its promise, importance for the region and the growth of its competitiveness. Around the core, clusters are concentrated medium and small enterprises, suppliers and infrastructure units supporting the technological chain [5].

Based on the practice of developed countries and in the conviction of the authors, the cluster should not be considered as a single independent institutional structure in the form of a superstructure. The practice of developed countries proves: "The cluster is not a superstructure, but voluntary cooperation of the subjects' activities!" [6. p. 40-42]. That is, an agricultural cluster should not be considered as an organizational and legal form of a market entity, but it involves the creation in a limited territory on the principles of partnership, cooperation and specialization of associations, equal economic agrofirms, agricultural production cooperatives and other enterprises (including farms) with the preservation of economic and legal independence, where competition is the driving force behind the innovative development of the entire system, including the adjacent territories [6, 7]. Rationally combining synergistic factors of production of communities of agricultural firms, industries, various infrastructures, market elements and hierarchical coordination of actions, cooperation, information and property ties (in the form of equity participation) contribute to the growth of competitiveness. The size and level of use of the investment potential of the socio-economic system in the region depend on the efficiency of using the accumulated production potential of a group of enterprises, taking into account its transformation within the agrarian cluster, the phases of its development, stages of the life cycle in the conditions of the inclusion of highly liquid surplus capital in the turnover [3, 10].

Considering all the above, this paper aims at highlighting important aspects of implementation of clustering in agriculture and assessing the suitable approach modified and acclimatized from the experience of developed countries.

## **2 The role of clusters in agricultural sector of economy**

Analysis of recent studies and publications, especially international investigations, in which aspects of this problem in the production chain were considered, and on which the authors substantiate the selection of previously unresolved parts of the general problem. An important aspect of the cluster system is the integration of economic entities based on competitive advantages. In assessing the processes of reproduction and the formation of agricultural clusters in Uzbekistan [8], it is necessary to study the role of agricultural clusters, which are still not given sufficient attention. There are examples of regional territorial clusters, which are based on a sustainable system for the dissemination of new technologies, knowledge, competitive products using network management and relying on a joint scientific base. Taking into account the practice of developed international countries; clusters in the agro-industrial complex are a convenient tool for interacting with business, reducing dependence on vertically organized business groups through the diversification of the economy of the territories and solving the social problems of the regions [8, 9]. In the future, the cluster approach in the agro-industrial complex should be investigated, which is based on the new theory of economic growth and cooperation relations, where the factors of economic development are underutilized economic resources, that is, natural resources,

primarily land, economic resources, i.e. capital, and human capital, which includes labor resources and entrepreneurial activity with the advanced application of science and innovation [6].

The cluster concept represents a new point of view on the development of national and regional economies and is considered one of the most significant factors in the competitiveness of the region at the present stage [4, 11]. Moreover, the cluster has effects that are not inherent in other forms of spatial organization of production, including synergistic effect, social capital, public-private partnership, etc., which together give it additional competitiveness [11]. The cluster-based approach is an integral part of the theory of spatial organization of production. The cluster phenomenon is becoming a key component of the economic development of countries and regions. In the USA, Great Britain, France, Germany and other developed countries, more than half of the industrial output is produced and exported through clusters [10, 12, 15].

In the message of the President of the Republic of Uzbekistan to the parliament, the task was set in 2019 to create 48 cotton-textile clusters in cotton growing alone and to bring the share of grown raw cotton in clustered regions to 52.0% [1]. The formulation of such a task follows from the fact, firstly, due to flaws in market mechanisms in the cotton complex in most farms of cotton specialization, the industry becomes an unprofitable sphere, and secondly, economists have proved that when switching to a complete processing technology in the cotton complex the cost of production obtained from one kilogram of cotton fiber can be brought up to 16-20 US dollars, while 1.5-1.7 US dollars comes from the export of cotton fiber. In addition, it must be admitted that the cluster is intended to become a local growth point, a center for the introduction of innovations and stimulating economic development [8, 10].

In recent years, in the practice of many states, including especially in the states of the post-Soviet period at the regional level, one of the main reserves for increasing competitiveness has been considered the creation of clusters interconnected by close economic relations and complementing each other [6, 9]. In the process of locating production and developing the regional economy, various forms of territorial organization have developed. Traditionally, free-economic industrial regions, agglomerations, territorial-production complexes are distinguished. Clusters are a modern, rapidly spreading form of territorial organization of the region's economy. Taking into account their local advantages and peculiarities, the problems of cluster formation and the realization of regional competitive advantages are usually considered at the regional level.

### **3 Different cluster-based approaches addressing the issues in agriculture**

In some cases, the cluster is considered as a governing body or a superstructure over the subjects included in the cluster for economic reasons. Western practice proves the opposite, that is, a cluster is a set of cooperating, but at the same time competing enterprises, connected by horizontal and vertical ties, formed on the basis of an institutional factor and jointly using economic institutions through contractual mechanisms. In the cluster, the focus of the search for competitive advantages is shifted to external factors of the institutional level, such as public-private partnership, social capital, synergistic effect, cooperation between the state, business, science and education, which leads to an additional competitive effect [4, 13].

The study of the approaches and views of scientists shows the presence of different approaches to the problems of clustering. The authors understand a regional cluster as a group of interconnected companies and organizations localized in the region that interact with each other in the production and sale of goods and services within a single value chain

to achieve a specific economic effect and realize the competitive advantages of a given territory. Unlike other forms of territorial organization of the economy, the cluster is distinguished by market interaction between the participants of the cluster association, based on competition and cooperation, the ability to adapt to changing environmental conditions [15]. Clusters are formed in a market economy, when enterprises are interested in strengthening their competitive advantages and in getting more profit from joint activities in a certain territory. At the same time, the regional cluster as a form of territorial organization of the economy is developing not only in industry, but also in the service sector. The cluster approach to the territorial organization of the regional economy is aimed at studying the conditions for the functioning of specific enterprises and organizations [14].

The analysis of cluster theories showed that the identified principles of cluster formation (geographic, qualitative, horizontal, vertical, focal and lateral) do not always adequately reflect modern requirements for the organization of cluster associations [3, 13]. The principles of organization and functioning of regional clusters include a territorial feature, zonal specialization, territorial localization, intra-cluster competition and cooperation, interdependence, innovativeness, dynamism, multiplicity of participants, common joint activities of companies, unity of information space, common corporate culture, structured regional cluster [16].

The study of existing approaches to the classification of clusters allows us to conclude that at present in science and in practice there is no generally accepted ordered system of criteria and indicators for the classification of clusters. The development of a methodology for the classification and assessment of the effectiveness of clustering activities makes it possible, without any hesitation, to develop a scheme for the formation and functioning of regional industrial clusters, which will ultimately allow us to avoid unprofitable agricultural sectors and subjects of the agricultural market, as well as significantly increase the export potential of the country and regions.

When studying the development trends of integrated forms of management, aspects that reflect the influence of various forms and types of integration on economic growth, the sustainability of economic development and the competitiveness of products of the agro-industrial complex become of particular relevance [17].

The controversial attitude to the problems of creating economic clusters, which has developed today in scientific circles of Russia, requires an in-depth study of scientific approaches to this economic phenomenon within the framework of a new concept of competitiveness, consideration of the possibilities of creating qualitatively new integrated structures aimed at implementing the innovative and investment component of economic policy and practical transformation of mechanisms of state regulation of integrated systems in the agro-industrial complex, including at the regional level [18].

The enterprises of the cluster interact according to the principle of complementarity, competition and cooperation. In the process of implementing this principle, the firms that form a cluster increase their overall competitiveness compared to firms located outside the cluster. The internal environment of the cluster is also characterized by a rapid growth in the volume of information links (including the exchange of ideas, "know-how"), as well as technologies between the enterprises that make up the cluster [4, 5, 16].

## **4 Strategies on promoting clusters in agriculture**

The "Strategy for the Development of Agriculture of the Republic of Uzbekistan for 2020-2030" adopted by the decree of the President of the Republic of Uzbekistan dated October 23, 2019 No. PD-5853, sets the task of radically improving state policy aimed at deepening the ongoing reforms aimed at increasing the competitiveness of the agri-food sector, and covers the following strategic priorities [2]:

- ensuring food security of the population;
- creating a favorable agribusiness climate and value chains;
- reducing the role of the state in managing the sector and increasing investment attractiveness;
- ensuring the rational use of natural resources and environmental protection;
- development of modern systems of public administration;
- phased diversification of public spending to support the sector;
- development of science, education, systems of information and consulting services in agriculture;
- rural development;
- development of a transparent system of industry statistics.

At present, the development of clusters is a recognized tool accompanying sustainable innovative development and increasing the competitiveness of agriculture in the region and the agro-industrial complex as a whole. The use of the cluster form of organizing agricultural activities is provided for in a number of legislative, regulatory and legal and program documents, the most significant of which are: the Concept of the formation and development of innovative industrial clusters in the Republic of Belarus, the State Program of Innovative Development of the Republic of Belarus for 2011-2015, Strategy attracting international direct investment to the Republic of Belarus for the period up to 2015 [11].

Recently, the concept of business clusters has become the most used term in economic and legal practice. The emergence of the need for business clusters in the post-Soviet period is mainly associated with the action of ineffective market relations between sectors of the economy [7]. For the effective use and existence of business clusters, it is necessary to consider them on the platform of a categorical-system methodology within the framework of such aspects as structural, functional, target, evolutionary. Here, their main questions are to disclose the essence of clusters of an economic nature, clarify them as a category and definition, generalize features in comparison with other forms of integration associations of economic entities [9, 19]. From the point of view of substantiating the effectiveness of their formation and existence, the study of the component-element composition of business clusters, their structure, mechanisms of goal formation and functioning, evolutionary aspects are the most pressing problems [12].

In the conditions of a market economy, globalization and the development of competition between market entities, the need to increase the competitiveness of the country, individual regions, as well as enterprises and organizations belonging to the goals and objectives of one sectoral-economic complex, which are interconnected along the technological and economic chain, is increasing [20]. In the context of the formation of a competitive innovative economy of the Republic of Uzbekistan, including its agricultural sector, achieving sustainable development is a priority task of the state aimed at ensuring food security, improving the level and quality of life of the rural population, rational use of natural resources and preserving the environment. The creation of sectoral (intersectoral) and territorial integrated structures, one of which is the agro-cluster, is of particular importance in ensuring the sustainability of the agricultural sector [5, 10].

At present, the development of clusters is a recognized tool accompanying sustainable innovative development and increasing the competitiveness of agriculture in the region and the agro-industrial complex as a whole. The use of the cluster form of organizing agricultural activities is provided for in a number of legislative, regulatory and programmatic documents, the most significant of which are: "Strategy for the development of agriculture of the Republic of Uzbekistan for 2020-2030", where one of the strategic priorities is the creation of a favorable agribusiness climate and value chains [1].

The cluster has effects that are not inherent in other forms of spatial organization of production, including synergistic effect, social capital, public-private partnership, etc.,

which together give it additional competitiveness. The cluster approach is an integral part of the theory of spatial organization of production. The cluster phenomenon is becoming a key component of the economic development of countries and regions. In the USA, Great Britain, France, Germany and other developed countries, more than half of the industrial output is produced and exported through clusters [3, 4, 20].

"Strategy of actions in five priority directions of development of the Republic of Uzbekistan in 2017 - 2021" adopted by the decree of the President of the Republic of Uzbekistan dated February 7, 2017 No. PD-4947 "On the strategy of actions for the further development of the Republic of Uzbekistan" in terms of modernization and intensive development of agriculture, it is planned to deepen structural reforms and the dynamic development of agricultural production, further strengthening of the country's food security, expanding the production of environmentally friendly products, significantly increasing the export potential of the agricultural sector, stimulating and creating favorable conditions for the development of farms, primarily multidisciplinary, engaged in both the production of agricultural products and processing, procurement, storage, sales, construction work and provision of services, implementation of investment projects for the construction of new, reconstruction and modernization of existing processing enterprises facilities equipped with the most modern high-tech equipment for deeper processing of agricultural products, production of semi-finished products and finished food products, as well as packaging products, further expansion of infrastructure for storage, transportation and marketing of agricultural products, provision of agrochemical, financial and other modern market services, expansion of scientific research work on the creation and introduction into production of new breeding varieties of agricultural crops, resistant to diseases and pests, adapted to local soil, climatic and environmental conditions, and animal breeds with high productivity [1].

## **5 Implementation of clustering in agriculture of Uzbekistan**

As part of the consistent implementation of measures to form market relations between farms and textile enterprises, since the beginning of 2018, a cluster form of organization of cotton and textile production has been introduced in 20 regions of the republic on the territory of 160 thousand hectares [6].

Since the beginning of this year, cotton and textile industries have taken measures aimed at introducing advanced agricultural technologies and progressive methods of organizing work, ensuring the efficient and rational use of water resources, equipping with modern agricultural machinery and attracting highly qualified international specialists and agronomists to the cotton industry [7].

As part of the implementation of the cluster form of organizing cotton and textile production in 2018, water-saving technologies were applied on 3,163 hectares of cotton areas by irrigating fields with flexible plastic pipelines, drainage systems and reservoirs were built, 225 pumping units were installed in areas with difficult access to irrigation sources, 1,285 units were purchased various agricultural equipment, highly qualified international specialists in agriculture (agronomists, specialists in modern equipment and technologies, specialists of scientific institutes) were involved, the successful experience of cotton growing in Turkey, Israel, Brazil and the USA was studied abroad, more than 4.3 thousand new work places [8, 9].

As a result of the ongoing reforms to cluster the industry in Uzbekistan, if in 2017 there was only one cluster in the republic, then in 2018 there were already 15, and in 2019 their number reached 75. Cotton-textile clusters currently operate over 907,783.0 hectares of cotton plantations. Their land areas are very different from each other (Table 1) [1, 10].

**Table 1.** Comparative indicators of cotton-textile clusters by the area of the cotton crops they fixed in 2019.

#	Territorial unit	Crop area, ha		Ratio
		Small	Large	
1	Across the country	377.0	47,264.0	1.0:125.4
2	Republic of Karakalpakstan	2,600.0	15,250.0	1.0:5.9
3	Andijan province	4,582.0	10,309.0	1.0:2.25
4	Bukhara province	1,501.0	47,264.0	1.0:5.84
5	Djizakh province	8,100.0	29,400.0	1.0:3.63
6	Kashkadarya province	6,500.0	35,650.0	1.0:5.48
7	Navoi province	8,104.0	24,484.0	1.0:3.02
8	Namangan province	3,955.0	23,218.0	1.0:5.87
9	Samarkand province	377.0	17,077.0	1.0:45.3
10	Surkhandarya province	2,216.0	16,874.0	1.0:7.61
11	Sirdarya province	8,000.0	16,357.0	1.0:2.04
12	Tashkent province	6,200.0	10,000.0	1.0:1.61
13	Ferghana province	5,120.0	11,435.0	1.0:2.23
14	Khorezm province	2,030.0	11,259.0	1.0:5.55

The analysis of the given materials in the table suggests that during the formation of cotton-textile clusters, there are no clear patterns in the cotton crops assigned to them, which ignores the consideration of the characteristics of industries when creating production units. For example, in the republic as a whole, the fixed sown areas of cotton for cotton-textile clusters range from 377 hectares. up to 47,264.0 or the ratio is 1.0:125.4. At least in the context of regions, the fluctuation indicators between the lower and upper limits are more or less softened, but despite the more approximate demographic features, the fluctuation indicators remain high.

The largest areas of cotton crops are "Bukhoro Agroklaster" LLC in the Bukhara region with a land area of 47,264.0 hectares which unites the lands of 8 administrative districts, i.e. lands of Korakul, Vobkent, Gizhdvon, Korovulbozor, Peshku, Kogon, Shofirkon administrative districts, and the city of Bukhoro.

The highest fluctuation rates are observed in the cotton-textile clusters of the Samarkand province. That is, the area of the cotton crops fixed by them ranges from 377.0 hectares ("Amin Invest International" LLC) to 17,077.0 hectares (Samarkand Kamalak Invest Textile" LLC), that is, the fluctuations are 1.0 to 46. The most low fluctuation rates are observed in the cotton-textile clusters of the Syrdarya province. TI is the above mentioned indicators, respectively, 8,000.0 ha ("LT Textile Sirdaryo" LLC), 16 357.0 ("Bek cluster" LLC) and 1.0 to 2.04.

Such a sharp difference in the rates of fixing cotton crops to clusters is explained by the fact that this clustering process was carried out by artificial intervention from above, i.e. by ignoring the peculiarities of the creation and development of new institutional forms of organization in a market economy.

The cluster system in Uzbekistan, unlike other states, is organized in two directions. The first is a direct agreement between farmers and the textile business, while the second

one is textile enterprises with great potential form farming themselves [8]. An example is the "TCT cluster" in the Kuyi Chirchik district.

In accordance with the Decree of the President No. PD-5853 of the Republic of Uzbekistan dated October 23, 2019 "On approval of the strategy for the development of agriculture of the Republic of Uzbekistan for 2020-2030", from 2020, the plan for the production and mandatory sale of raw cotton is ceased. It is also planned to reduce the volume of mandatory grain sales to the state by 25%. [2].

At the end of 2019, the share of cotton and textile clusters accounted for 73% of the raw cotton crop, where higher yields and product quality were achieved, which in practice proves the relative effectiveness of this system [1, 2]. Therefore, in Uzbekistan, from 2020, the task is to completely switch to the cluster method of growing cotton.

In recent years, in the practice of many states, including especially in the states of the post-Soviet period at the regional level, one of the main reserves for increasing competitiveness has been considered the creation of clusters interconnected by close economic relations and complementing each other. In the process of locating production and developing the regional economy, various forms of territorial organization have developed [4, 16]. Traditionally, free-economic industrial regions, agglomerations, territorial-production complexes are distinguished. Clusters are a modern, rapidly spreading form of territorial organization of the region's economy. Taking into account their local advantages and peculiarities, the problems of cluster formation and the implementation of regional competitive advantages are usually considered at the regional level [12, 13].

In some cases, the cluster is considered as a governing body or a superstructure over the subjects included in the cluster for economic reasons. Western practice proves the opposite, that is, a cluster is a set of cooperating, but at the same time competing enterprises, connected by horizontal and vertical ties, formed on the basis of an institutional factor and jointly using economic institutions through contractual mechanisms [15, 17]. In the cluster, the focus of the search for competitive advantages is shifted to external factors of the institutional level, such as public-private partnership, social capital, synergistic effect, cooperation between the state, business, science and education, which leads to an additional competitive effect [17].

The study of the approaches and views of scientists shows the presence of different approaches to the problems of clustering. A regional cluster should be understood as a group of interconnected companies and organizations localized in the region that interact with each other in the production and sale of goods and services within a single value chain to achieve a specific economic effect and realize the competitive advantages of a given territory [6]. Unlike other forms of territorial organization of the economy, the cluster is distinguished by market interaction between the participants of the cluster association, based on competition and cooperation, the ability to adapt to changing environmental conditions. Clusters are formed in a market economy, when enterprises are interested in strengthening their competitive advantages and in getting more profit from joint activities in a certain territory. At the same time, the regional cluster as a form of territorial organization of the economy is developing not only in industry, but also in the service sector [8]. The cluster approach to the territorial organization of the regional economy is aimed at studying the conditions for the functioning of specific enterprises and organizations [6, 9].

## **6 Conclusions**

The analysis of cluster theories proves that the identified principles of cluster formation (geographic, qualitative, horizontal, vertical, focal and lateral) do not always sufficiently reflect the modern requirements for the organization of cluster associations. The principles



of organization and functioning of regional clusters include a territorial feature, zonal specialization, territorial localization, intra-cluster competition and cooperation, interdependence, innovativeness, dynamism, multiplicity of participants, common joint activities of companies, unity of information space, common corporate culture, structured regional cluster.

The study of existing approaches to the classification of clusters allows us to conclude that at present in science and in practice there is no generally accepted ordered system of criteria and indicators for the classification of clusters. The development of a methodology for the classification and assessment of the effectiveness of clustering activities makes it possible, without any hesitation, to develop a scheme for the formation and functioning of regional industrial clusters, which will ultimately allow us to avoid unprofitable agricultural sectors and subjects of the agricultural market, as well as significantly increase the export potential of the country and regions.

In its most general form, the cluster strategy for economic development assumes the benefits associated with the geographical concentration of enterprises. The economic mechanism for obtaining such advantages, as a rule, will be associated with maximizing the effect and minimizing costs due to the growth of specialization of enterprises, an increase in sales volumes and an expansion of the sales market.

Cluster refers to geographically limited concentrations of interconnected firms and can be used as a keyword for older concepts like industrial districts, specialized industrial agglomerations, and local production systems.

Despite the large number of definitions of the concept of "cluster", a number of common features can be distinguished, the mention of which makes it possible to isolate this phenomenon of the economy:

- geographical localization of enterprises;
- the interdependence of market entities in terms of final products;
- not achieving ideal or expected production, social and economic results without clustering;
- the objective need for close economic ties between enterprises;
- the presence of a common institutional and market infrastructure.

The successful implementation of these principles is observed in agricultural clusters created on the basis of the territorial concentration of specialized suppliers and manufacturers, linked by a common technological chain using economic methods without administrative intervention of state bodies. Based on the analysis of theory and practice, it follows that the agrocluster should not be considered as an organizational and legal form of a market entity, but it involves the creation in a limited territory on the principles of partnership, cooperation and specialization of associations, equal-economic agrofirms, agricultural production cooperatives and other enterprises (including farms) with the preservation of economic and legal independence, where competition is the driving force behind the innovative development of the entire system, including the adjacent territories. Rationally combining synergistic factors of production of communities of agricultural firms, industries, various infrastructures, market elements and hierarchical coordination of actions, cooperation, information and property ties (in the form of equity participation) contribute to the growth of competitiveness.

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