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Article

Ensuring Food Security within the Agro-Industrial Clustering System

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Abstract: Combining agro-industrial clusters has a major effect on socioeconomic development by utilizing local advantages and tackling issues related to food security. In order to uncover a knowledge gap in the effective integration of cluster-based development methods, this study focuses on the Kashkadarya region, which is distinguished by its preponderance of agricultural GDP contribution. To maximize productivity and improve regional food security, we examined multifactor empirical models using sophisticated modeling and forecasting techniques. Agro-industrial clustering raised income levels, increased employment, and enhanced productivity, according to the results. Sustainable development and resource efficiency were aided by innovations such as garbage recycling and water-saving irrigation. With its scalable strategy to address food security and promote economic and environmental sustainability, our findings highlight clustering as a key mechanism for furthering agro-tourism, infrastructural, and socioeconomic progress.

Keywords: service network, agro-industry clustering, agricultural modernization, innovative development, food safety, cost reduction - continuity, improvement, clustering

1. Introduction

The clustering of agro-industries plays an important role in the socio-economic development of regions, as this process combines a number of factors and creates a synergistic effect. Based on current modern scientific methods, it will be possible to organize the mentioned factors based on the specific and general economic and social picture of the region. In particular, there are both cases in the direction of socio-economic development of the Kashkadarya region, and the main aspect of its uniqueness is that the region has a large share of agricultural production in the gross national product, that is, it has the largest share compared to the republic and its constituent regions. This has led to increased importance of the agricultural industry and reforms in the agricultural industry system.

Based on the global experience in the practice of clustering in our country, the development of the agricultural industry using the cluster method, and taking into account the food security potential of the regions, the direction of development of food security, and the features of implementation mechanisms, realize the implementation of large-scale operations. The clustering of agro-industries in the region plays an important role in social and economic development, as this process combines a number of factors and creates a synergistic effect. Based on current modern scientific methods, it will be possible to organize the mentioned factors based on the specific and general economic and social picture of the region. In particular, there are both cases in the direction of socio-economic development of the Kashkadarya region, and the main aspect of its uniqueness is that the region

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2. Materials and Methods

Scientifically, it can be defined as an activity, as a process, as a factor, and according to other characteristics. Definitions of regional food security development based on aggregation of agricultural industries are given in a wide range of sources, and are used by researchers in their scientific work [1].

On the basis of agro-industry aggregation, modeling and forecasting of the development of production processes in enterprises for the development of regional food security, multi-parameter production optimization, regional development of the industry and classification of its multi-factor empirical models occupy a great place in scientific research [2].

Emphasizes that the region's innovative potential is the gateway to necessary and sufficient opportunities for the innovative development of commercial services [3].

On the basis of the aggregation of agricultural industries, in his studies of the motives of influencing the psychology of buyers and the development of food security in the regions, he put forward the idea of studying the intricacies of the optimal organization of the agricultural industry. The aggregation system as a simple object with the help of modeling methods evaluates the application criteria as a necessary event [4].

3. Results and Discussion

As a result of the regional grouping of agricultural industries using the cluster method, it is possible to interpret developing economic sectors and socio-economic processes in different ways.

In order to ensure job opportunities in the region, the agricultural group recommends the solution through expanding production, developing the processing network and increasing the volume of exports. In fact, agroclusters created 2,835 new jobs in Guzar district, 3,321 in Kamashi, 4,139 in Karshi, 4,219 in Kasan, 2,259 in Kitab, 1,566 in Mirishkor, 1,488 in Muborak, 3,345 in Nishan, 3,709 in Kasbi, 2,866 in Chirakchi, 4,805 in Shakhrisabz, and 2,614 in Yakkabog between 2019 and 2023. These employment indicators can be viewed as one of the factors contributing to the increase in household incomes. In fact, according to official data of statistical organizations for 2023, the share of wage income in the structure of the average income of the population is more than 70 percent, and the share of jobs created by agricultural clusters in the total jobs created. It was 38.9 percent. This means that a large part of the influence of factors affecting the growth rate of population income corresponds to the contribution of the agricultural cluster factor.

It is known from advanced foreign experiences that agricultural clusters depend mainly on developing manufacturing and increasing the volume of exports to create new job opportunities. Developing recycling is the most effective way to create added value, and it is also of great importance in providing job opportunities for the population. Processing primary products, waste must become a feature as a result of the collection practice. The increase in export potential in the region is considered significant with the development of the service network in the field of agriculture.

Agricultural groups for the modernization of agriculture have the opportunity to introduce new technologies into production, storage and sales processes. Creates an opportunity to introduce new technologies to farms that are members of agricultural groups. In general, there is an increase in efficiency and quality, as well as a reduction in costs. In fact, agroclusters introduced water-saving irrigation technology on 15,470 hectares of land in 2020, 40,352 hectares in 2021, 35,859 hectares in 2022, and 28,227 hectares in 2023 in the Kashkadarya region. According to scientific sources, there are reliable reasons that the use of water-saving technologies will lead to increased productivity in agriculture in the region and an increase in the volume of product production.

Groups also allow members to exchange knowledge, which is a key resource for agricultural modernization. Training qualified personnel is one of the directions of development of agro-industrial clusters.

Clustering agricultural industries to improve the use of local resources is an effective way to combine resources, use local raw materials, and protect the environment.

In fact, groups allow members to pool resources, which increases efficiency and reduces costs. It encourages the use of local raw materials, which leads to the development of the local economy. The groups help their members protect the environment, which contributes to sustainable development. In the past five years, the energy efficiency of the activities of members of agro-industrial clusters has increased from 3.4 percent to 4.2 percent. This was achieved on the basis of the reconstruction of energy buildings, the introduction of energy saving technologies, and the development of energy supply infrastructure.

It can be said that the practice of clustering agricultural industries has become an important factor in the development of infrastructure, agro-tourism and the social sphere in the regions.

The clusters have become a mechanism to attract investments in the development of transport, energy and other infrastructure. Qashqadariya, let me pay the price of the ring, as well as the results of the Infrazil flexible tire, which is located near 71603,6 For example, the expenditures by agro-industrial clusters on regional infrastructure development increased by 49.6% in Guzar district, 28.5% in Kamashi, 33.4% in Karshi, 69.6% in Kasan, 140% in Mirishkor, 86.5% in Nishan, 49.5% in Kasbi, 98.2% in Chirakchi, 17.1% in Shakhrisabz, and 41.1% in. This led to the development of agricultural tourism and the improvement of the social sphere, especially education, health and other social services.

We appreciate that agro-industry clustering has certain priorities in finding solutions to food security problems closely linked to agricultural development. The development of agro-industrial clusters plays an important role in ensuring food security. We believe that the reasons for this are as follows:

- Increase productivity in the agricultural network - allows group members to introduce new technologies, learn good practices and share knowledge, which will lead to increased productivity and increased food production;
- Cost reduction – by allowing members to pool resources, standardize procurement and reduce logistical costs, resulting in lower food prices and improved access to food for the population;
- Improving Quality - Helping group members implement quality control and standards will increase food safety and provide consumers with higher quality products;
- Reducing food losses – Processing plants within clusters allow agricultural products to be stored and processed, reducing food losses and improving food supplies;
- Increasing the scale of food processing enterprises allows the production of new products and increased food diversity, expanding the food choice of the population;

- Improving food supply - forms a suitable marketing system with group members and is concerned with export development, thus creating a healthy competitive environment in the food market and increasing consumer choices;
- Stabilize food prices - allows members of groups to enter the market together and achieve price stability, which increases food security and improves the ability to purchase food for the population;
- Expanding Food Production - Allows group members to attract investments to finance projects that expand food production;
- Developing the infrastructure for food production and sale. Clusters have the ability to attract investments to develop the infrastructure for food production and sale, which is of great importance in solving storage, manufacturing and transportation problems;
- Development of food technologies - has the function of creating an investment and innovation environment for the development of food technologies for group members, which enhances the chain of raw materials, production, processing, sale and consumption, leading to lower cost and quality and providing an opportunity to increase productivity and throughput, increase product volume, and create additional value.

The priority of agro-industrial clusters, or the organization of agricultural systems based on the aggregation method, according to the above evidence, helps to understand the essence of the development of agro-industrial clusters in ensuring food security. For this reason, in our study, a relatively simple schematic classification of the content of the importance of the development of agro-industrial clusters in ensuring food security was developed on the example of the Kashkadriya region. (Figure 1).

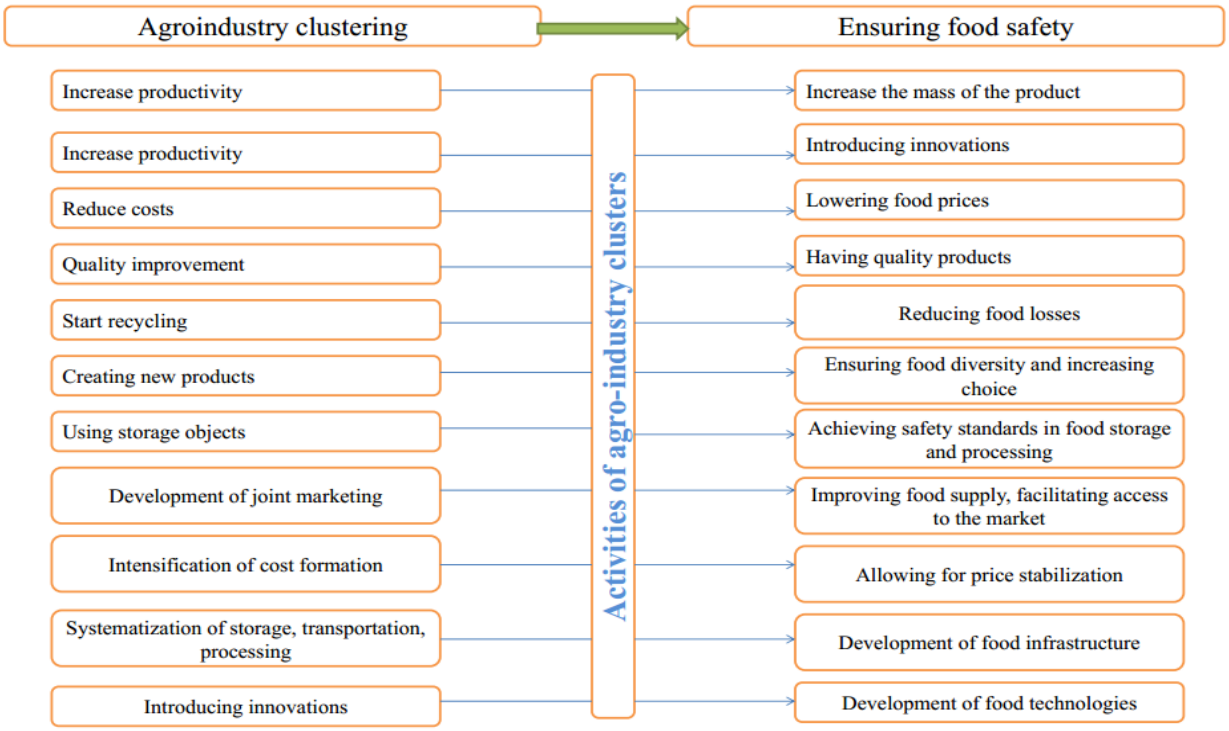

Figure 1. A schematic classification of the importance of developing agricultural industry groups in ensuring food security

One of the requirements for the development of the agricultural industry to ensure food security was the creation of added value in agriculture based on the introduction of

the collection method. In fact, agro-industrial clusters play an important role in creating added value in agriculture, which we believe creates the following opportunities.

4. Conclusion

In general, agro-industrial clusters are regional engines of value-added production in agriculture. Indeed, it has the potential to advance processing, facilitate market access, introduce innovation, train staff, and attract investment.

- Expanding the establishment of processing enterprises in the region, i.e. intensive technical and technological support for fruit and vegetable canning, dairy processing, grain processing, meat products processing, implementing secondary raw material processing enterprises, encouraging skilled personnel, and attracting investments in the region. In this sector, financing the introduction of innovations is an economic reality that can be achieved based on the potential of multifunctional agricultural clusters. In this case, the added value in the network increases;
- The creation of a new type, new design and new names of products is associated with the function of implementing R&D projects of agro-industrial groups. In this it will be possible to rely on their experience in producing organic products, value-added products and processed food products and shaping their markets;
- The ability to diversify products is the fact that agro-industrial clusters have a wide range of functions and production capacity at the same time.

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