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Article

Foreign Models of Developing Cotton-Textile Clusters

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Abstract: The article analyzes the experiences of several foreign countries in increasing the efficiency of cotton-textile clusters in the Khorezm region. It examines the processes being implemented to enhance production efficiency through automation of enterprises within the cotton-textile cluster, the introduction of smart equipment and advanced technologies, integration of enterprises with digital platforms, and real-time data monitoring and management. Based on this, relevant conclusions have been drawn.

Keywords: Cotton-textile clusters, efficiency, statistical indicators, econometric modeling, export, regional integration.

1. Introduction

The development of cotton-textile clusters in the region increases economic activity and stimulates sustainable regional economic growth. Through the cluster system established in the region, instead of selling raw cotton, it becomes possible to process it into yarn, fabric, and finished products. By directing these processed goods to domestic and foreign markets, the value chain within the economy is expanded. Internal farming units formed within the cotton-textile clusters, as well as textile enterprises and factories designed for cotton processing, along with logistics and service sectors, have become interconnected. As a result, new jobs are created in the region [1].

Cotton-textile clusters contribute to an increase in industrial production volumes and local budget revenues across regions. At the same time, by diversifying the regional economy, they create opportunities to enhance stability and competitiveness. Exporting finished products produced within regional cotton-textile clusters to foreign markets strengthens the country's export potential and its competitiveness in the global marketplace [2].

Introducing modern technologies into the cultivation of raw materials within cotton-textile clusters and into the processing stages such as increasing the level of automation, applying digital management systems, and implementing green technologies improves labor productivity and workplace safety within clusters, enhances energy and resource efficiency, and reduces negative environmental impacts [3].

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2. Materials and Methods

The research focuses on evaluating the development principles of cotton-textile clusters and assessing the adaptability of foreign models to Uzbekistan's conditions. It was conducted using several scientific and methodological approaches: Comparative analysis, Content analysis, Statistical observation, Structural-matrix approach. This combination of methods ensured the scientific validity of the research and made it possible to assess the possibilities of applying foreign models in the conditions of Uzbekistan [4].

3. Results and Discussion

It is known that raw cotton grown in cotton-textile clusters is used as the main resource for cotton-textile clusters. Therefore, cotton cultivation is the main factor in the development of cotton-textile clusters. The high quality and sufficient availability of raw cotton ensures the efficient and stable production of yarn, fabrics, and finished clothing [5]. Taking into account the above aspects, we will dwell on which countries occupy leading positions in the cultivation and export of cotton in the world. In 2024, the leading cotton-growing countries in the world are India - 5.9 million tons, China - 5.73 million tons, the United States - 3.96 million tons, Brazil - 2.68 million tons, Pakistan - 0.98 million tons, Turkey - 0.83 million tons. The volume of cotton production in our country amounted to 0.94 million tons [6]. If we pay attention to the volume of world cotton exports in 2024, then China exported cotton worth 10.8 billion dollars (20.6 percent of world cotton exports), India - 6.5 billion dollars (12.4 percent of world cotton exports), the United States - 6.2 billion dollars (11.7 percent of world cotton exports), Brazil - 5.3 billion dollars (10.1 percent of world cotton exports), Vietnam - 2.9 billion dollars (5.4 percent of world cotton exports), Turkey - 2.2 billion dollars (4.1 percent of world cotton exports) [7]. In our country, this figure amounted to 2.3 billion dollars (4.4 percent of world cotton exports). In the world, the cotton-textile industry is manifested as an important factor of economic development and export potential. Currently, the principles of development of cotton-textile clusters are formed depending on the resource potential, technological development, and economic strategy of each country. Analysis of modern trends in the development of the cotton-textile industry and clusters is an important scientific and practical tool that serves to effectively manage the development processes of the cotton-textile industry and clusters, increasing their competitiveness[8]. Modern trends of several foreign countries for the development of the cotton-textile industry and clusters were studied Fig. 1.

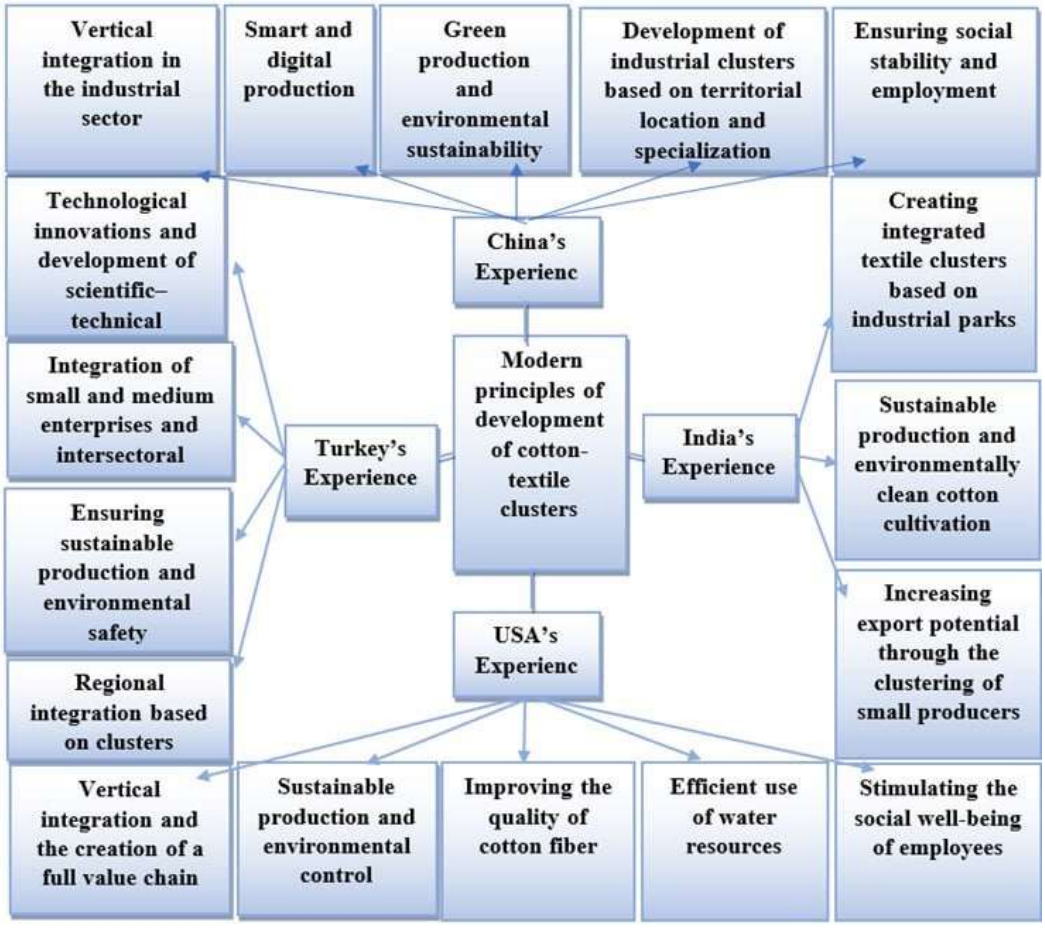

Figure 1. Modern principles of development of cotton-textile clusters

China stands out in the development of its cotton-textile industry due to its modern principles and internationally recognized approaches.

The principle of vertical integration in the industrial sector: based on this principle, cotton-textile clusters provide for the unification of all production stages, from the cultivation of raw materials necessary for the production of products to finished products, and the continuous development of clusters. Based on this principle, the continuous and effective operation of each stage increases economic efficiency. In the Xinjiang region of China, vertical integration has been created in a full-fledged industrial sector in the direction "from cotton fields to ready-made clothing". As a result, the level of cotton processing increased by 10% compared to 2020 and reached 42% in 2024[9].

Principle of smart and digital production: This principle emphasizes the introduction of modern technologies within cotton-textile clusters and the optimization of production processes through advanced digital and smart systems. It encompasses the automation of enterprises, the adoption of intelligent machinery and cutting-edge technologies, integration with digital platforms, and real-time data monitoring and management. Collectively, these measures lead to a substantial increase in production efficiency across the cluster. In the cotton-textile industry of the Keqiao region of China, such indicators as innovative potential (the cluster's ability to implement new technologies and production methods), agglomeration (the level of concentration of industry in one region), green and low-carbon development, international cooperation, attracting foreign investment, and joining global supply chains are at a high level[10].

Principle of green production and environmental sustainability: Ensuring environmental safety in the processes of growing raw materials or processing raw materials at cotton-textile enterprises, energy saving, reducing waste, and ensuring sustainable development through the use of low-carbon technologies. In several regions of China, based on the "high-end, intelligent, green, cluster-based development" strategy,

clusters effectively carry out production processes when the level of environmental damage is very low or absent. It was revealed that the annual value added for dyeing and printing in the Keqiao textile cluster has increased by an average of 6.7% over the past 3 years[11].

Principle of development of industrial clusters based on territorial location and specialization: The essence of this principle involves concentrating industrial enterprises in a specific area, specializing them within their field of focus, and thereby forming a clustered production system. By gathering industrial enterprises in a particular territory, a regional system emerges that encompasses the entire process from raw materials to finished products.

The principle of ensuring social stability and employment: is ensuring employment of the population and creating new jobs in the process of developing cotton-textile clusters, thereby ensuring social stability. As a result of the development of clusters in the regions, production efficiency increases, which expands regional employment, involves the local population in economic processes, and strengthens social well-being. In China's Xinjiang region, 82% of the local population (over 7 million people) are employed in textile clusters located in the region, and about 70,000 new jobs have been created in recent years[12].

The modern principles for the development of the Indian cotton-textile industry are as follows. Principle of creating integrated textile clusters based on industrial parks: Full-fledged cotton raw materials, fiber, a processing enterprise, clothing, export abroad implies clustered production by creating infrastructure and industrial parks with the introduction of modern new technologies, concentrating the value chain in one place. This will create an opportunity to attract investments, reduce logistics and energy costs, ensure vertical integration, create jobs, and increase export potential.

Principle of sustainable production and the cultivation of environmentally clean cotton: This principle includes the process of substantiating the process of growing and processing cotton based on environmentally sustainable and energy/resource-efficient methods, as well as increasing the income of local farmers and strengthening the national export potential. Optimization of the process of irrigation and fertilizer application, as well as increasing cotton yield through the use of green agricultural technologies. Also, the integration of small farmers - uniting farmers in the cluster system, bringing their products to markets and increasing economic efficiency[13].

The principle of increasing export potential through the clustering of small producers: encompasses the process of increasing production and logistics efficiency, technical and financial support by uniting regional producers into a vertically integrated cluster system. Individual small enterprises located in the region produce small volumes of products and do not meet the demand of the global market, in this case, with the help of a cluster, small enterprises can export products to foreign markets.

Turkey stands out from other countries due to the high-quality production of clothing in the textile industry. The modern principles for the development of the cotton-textile industry in Turkey are as follows.

Principle of technological innovations and scientific and technical development: Increasing the production efficiency of cotton-textile clusters located in the region through the implementation of scientific and practical projects aimed at introducing modern and new technologies, improving production processes. The "Composite Material and Technical Textile Cluster" has been established in the Bursa and Ankara regions of Turkey, where clusters are increasing their export potential through the application of scientific and technical innovations[14].

Integration of small and medium-sized enterprises, the principle of intersectoral cooperation: This principle is the consolidation of small and medium-sized producers located in one region into a cluster system of cotton-growing and processing enterprises, increasing production efficiency and export potential by involving them in the production and export processes of products in cooperation with each other. The "Denizl Technical Textile Cluster", located in the Denizl region of Turkey, creates cooperation and support services for small and medium-sized enterprises. Thanks to this, small and medium-sized

enterprises have the opportunity to jointly produce and process products, carry out technological innovations, and enter the global market.

Based on the principle of ensuring sustainable production and environmental safety, the processes of growing and processing raw cotton in cotton-textile clusters should be carried out without harming the environment. At the same time, it is necessary to increase the competitiveness of the cluster by saving resources, increasing energy efficiency, and introducing green production. 22 companies located in Bursa, Turkey, united to form the "Ecological Textile Cluster". As a result of this clustering, it is planned to increase the level of production efficiency and environmental effectiveness, as well as strengthen export competitiveness.

Based on the principle of regional integration based on clusters, textile enterprises unite in a certain region and centralize production, logistics, and additional services, which reduces production costs and increases economic efficiency. In the textile industry of Turkey, clusters located in the Marmara, Ege, and Chukurova regions operate on the principle of territorial integration. The indicator of production and economic efficiency in these clusters has increased as a result of regional integration[15].

The sources indicate that the modern principles of development of cotton-textile clusters in the USA consist of the following. The principle of vertical integration and the creation of a full value chain: is one of the comprehensive approaches ensuring the rational use of resources and increasing production efficiency and creating added value by combining the processes of growing cotton, primary processing (cleaning, spinning), fabric production and sewing finished products into a single production system in cotton-textile clusters.

Principle of sustainable production and environmental control: This principle represents the process of minimizing environmental damage, efficient use of natural resources, and increasing production efficiency in the process of growing and processing cotton in cotton-textile clusters. At the same time, it provides for the introduction of new water-saving technologies, the use of energy-saving technologies in production processes and increasing energy efficiency, as well as the efficient use of land for growing cotton.

The principle of improving the quality of cotton fiber: This is a principle aimed at maintaining the quality of cotton fiber in the chain of cotton cultivation and processing in cotton-textile clusters. Within the framework of the cluster, it consists of monitoring land areas where cotton is grown, collecting data on the condition of land areas and controlling equipment, and controlling the absence of other impurities on cotton fibers. Also, identifying varieties suitable for local conditions also means increasing yields by planting them on land plots within the cluster.

Principle of efficient use of water resources: In cotton-textile clusters, the effective use of water resources, optimization of soil and crop irrigation processes, introduction of modern irrigation technologies, as well as ensuring sustainable production through water quality control are considered fundamental. Through this principle, it becomes possible to effectively use water, prevent the spread of waste and pollution of water resources, and ensure environmental sustainability.

Principle of stimulating the social well-being of employees: Increasing the social well-being of employees in cotton-textile clusters, improving working conditions, ensuring health and safety, as well as stimulating them by observing fair labor standards. This principle not only improves the effectiveness of the work of employees in cotton-textile clusters, but also strengthens the social stability and competitiveness of the cluster system. The experience of developing the cotton-textile industry and clusters analyzed above shows that the application of these modern principles in the conditions of Uzbekistan is the main direction for increasing the competitiveness and sustainable development of cotton-textile clusters.

In our opinion, today the study of effective methods, modern principles, directions, and foreign models for the development of cotton-textile clusters is of great importance in the process of cluster development. Foreign models have specific content and directions for the development of clusters in the development of cotton-textile clusters, and are

distinguished by such aspects as the organization of clusters, increasing production efficiency, strengthening export potential, and introducing innovative solutions Table 1.

Table 1. Foreign models of development of cotton-textile clusters

Model Name (Country)	Content	Direction for the development of the cotton-textile industry
Vertical integration model (China)	It combines all stages from raw material cultivation to finished products into a single system, reduces costs, and increases efficiency.	Increasing competitiveness, export volumes and added value, creating new jobs.
Model for the organization of integrated mega-textile parks (India)	It will unite all stages of the cotton-textile industry in a single territory, develop green industrial parks.	Development of full-fledged clusters, increasing environmental sustainability.
Model of cotton-textile clusters (China)	By concentrating the production chain in one area, it ensures efficient production.	Improving product quality, strengthening export potential, stimulating economic growth.
Turnover business model of the textile industry (Turkey)	Minimizing the consumption of carbon dioxide, water, and chemicals, aimed at resource processing and waste reduction.	Sustainable production, environmental sustainability and adaptation of products for long-term use.
"Company + Base + Farmers" model (China)	It combines vertical integration and social stability, the company manages, the base provides infrastructure, farmers produce.	Development of regional production, increasing local income and exports.
Micro-Factory Model in Clothing Production (USA)	Small, specialized factories produce products for given samples or orders.	Production of high-quality and adaptable products to customer requirements, implementation of innovative solutions.
Fashion Industry Cluster Model (Brazil)	It unites regional manufacturers, designers, and suppliers, creating a synergistic effect.	Innovative development, efficient use of resources, production of products corresponding to the international market.

Vertical integration model (China) consolidates the stages of production of finished products from raw cotton into a single system, ensuring efficient production aimed at reducing costs and increasing competitiveness. The principle of this model substantiates the concept "from cotton to clothing". Initially, this model was implemented at the Chinese textile company Weiqiao, which contributes to increasing the competitiveness of the cotton-textile industry, the volume of exports, and added value to the economy. After the implementation of the vertical integration model in some regions of China, costs at the stages of raw material cultivation and processing decreased, new jobs appeared in the

cotton-textile industry, and the volume of exports of cotton-textile products increased significantly.

Model for the organization of integrated mega-textile parks (India) - organizes effective production processes by uniting all stages of the cotton-textile industry in a single region. The basic principle of this model is based on the concept of "from raw material production to fashion products". Within the framework of this model, green industrial parks will be created, and infrastructure for the full development of textile clusters on new land plots will be created. On the territory of each created park, there will be a main development organization, that is, a management organization, and this organization will build infrastructure on the basis of public-private partnership. As a result of the introduction of energy-saving technologies in the created green industrial (textile) parks and the processing of waste, the environmental load on the environment will be reduced.

The cotton-textile cluster model (China) - reduces costs, increases production efficiency, and strengthens export potential by integrating the production chain at the stages of raw material cultivation and processing in cotton-textile clusters. Cotton-textile production enterprises and logistics infrastructure will be concentrated in one region. To stimulate the economic growth of clusters, the government provides infrastructure and financial support. By improving the quality of products, the possibilities of strengthening competitiveness in the international market and increasing export volumes are expanding. In China, 25 household textile clusters have been created through this model, in which more than 50,000 local residents work. The manufactured products are exported to more than 200 cities and more than 20 countries.

Turnover Business Model of the Textile Industry (Turkey) - is aimed at ensuring sustainability in the textile industry through resource processing in the processes of growing and producing products, reducing negative environmental impacts, and long-term efficient use of resources. This model emphasizes that all production stages in the textile industry work effectively in conjunction with each other, taking into account social and digital opportunities. The main principles of the model are to minimize waste from raw materials and finished products, as well as to reduce the consumption of carbon dioxide, water, and chemicals in the production of products.

The "Company + Production Base + Farmers" model (China) - combines vertical integration and social stability. If we pay attention to the concepts contained in the model, the company is a management organization that plans the production process and effectively organizes marketing and export processes. A production base is a specific area where raw material production, storage, preparation, and production infrastructure are located. Farmers are the main participants in the process of growing cotton and textile raw materials and producing finished products. The positive results of this model indicate the creation of new jobs in the regions, an increase in the income of the local population and the quality of products, as well as an increase in export potential.

The Micro Factory Model in Clothing Production (USA) in the textile industry, when the clothing production sector consists of small specialized micro factories, these micro factories produce products for given samples or special orders.

The main principle of this model was to compete not with large-scale production, but with the production of high-quality products that are adaptable to customer requirements. In the development of the cotton-textile industry, specialized production consists of increasing the possibility of small production enterprises to introduce innovations, specialized production of products related to large production chains. One of the positive aspects of this model is that it increases the possibility of introducing innovative solutions in the textile and clothing industry.

The fashion industry cluster model (Brazil) - is a model of a regional industrial cluster created for the development of the textile industry. The main principle of this model is to increase the level of profit and efficiency by combining several manufacturers, designers, suppliers, and shopping centers in one area. The directions in the development of cotton-textile clusters are innovative development, that is, the possibility of testing design and

technological innovations and efficient use of resources, as well as stimulating the production of products in accordance with the international market.

4. Conclusion

In our opinion, the modern principles and foreign experience analyzed above show the importance of introducing various integrated and innovative models for achieving effective economic and technological results in the development of cotton-textile clusters. Taking this aspect into account, the introduction of foreign models by adapting them to the conditions of our country and taking into account regional economic opportunities shows that it is possible to achieve such positive results as the development of cotton-textile clusters, increasing export potential, modernizing local production, and creating jobs.

REFERENCES

[1] Smith, *Global Textile Cluster Development Strategies*, London: Routledge, 2020.

[2] World Bank, "Cotton sector modernization and value-chain integration in developing countries," *World Bank Report*, no. 11429, pp. 1–45, 2022.

[3] OECD, "Innovation-driven development of agro-industrial clusters," *OECD Policy Papers*, no. 48, pp. 12–33, 2021.

[4] I. Johnson and M. Clarke, "Cluster governance and competitiveness in the textile industry," *Journal of Industrial Economics*, vol. 67, no. 3, pp. 455–472, 2019.

[5] FAO, *Global Experience in Cotton Value Chain Transformation*, Rome: Food and Agriculture Organization, 2021.

[6] UNIDO, "Cluster-based industrial development in Asia: Lessons for emerging economies," *UNIDO Working Paper*, no. 19, pp. 1–59, 2020.

[7] T. Yamamoto, "Integrated cotton-textile clusters in Japan: Historical evolution and modern reforms," *Asian Economic Review*, vol. 38, no. 2, pp. 142–160, 2018.

[8] European Commission, "Sustainable textile cluster models and circular production," *EU Industrial Strategy Papers*, no. 77, pp. 21–50, 2020.

[9] B. Thompson, "Cluster synergy and investment attraction in cotton manufacturing," *International Journal of Textile Economics*, vol. 12, no. 4, pp. 233–248, 2021.

[10] S. Karimov, "Comparative analysis of foreign cotton–textile clusters," *Central Asian Economic Review*, vol. 4, no. 1, pp. 56–70, 2022.

[11] McKinsey & Company, *The State of Fashion and Textile Clusters 2023*, New York: McKinsey Publishing, 2023.

[12] A. Gupta, "Indian cotton cluster reforms and digital traceability," *Journal of Agricultural Systems*, vol. 29, no. 2, pp. 101–118, 2021.

[13] Turkish Ministry of Industry, *Cluster Policies in the Turkish Textile Sector*, Ankara, 2020.

[14] International Trade Centre, "Global cotton market transformation: Cluster and value-chain approach," *ITC Analytical Report*, no. 55, pp. 1–37, 2019.

[15] M. Hernandez, "Latin American models of agro-textile clusters: Challenges and opportunities," *Journal of Development Studies*, vol. 51, no. 6, pp. 489–507, 2020.