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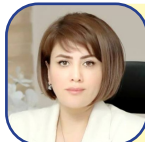
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DEVELOPMENT OF THE SILK INDUSTRY BASED ON INNOVATIVE ACTIVITIES IN THE REPUBLIC OF UZBEKISTAN

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Abstract: The article examines the reforms, results, and problems carried out in the silk industry of the Republic of Uzbekistan, as well as proposals developed for the development of the silk industry based on innovative activities.

Key words: innovation, innovative activity, innovation process, cluster system, silk industry, influencing factor, management approach.

INTRODUCTION

Innovative activity in modern conditions is a prerequisite for maintaining and strengthening an enterprise's position in the market. It is based on numerous ideas ranging from simple ones that require minimal investment to large-scale initiatives driven by fundamental and exploratory research, which cannot be implemented without significant financial costs. In the contemporary economic landscape, innovation is regarded as one of the key drivers of modernization worldwide.

In the sericulture industry, the primary objective is to enhance production efficiency through innovative approaches. Currently, extensive research is being conducted to optimize the use of available resources, promote employment in rural areas, increase the industry's export potential, expand the range of silk products available in the global market, and improve their competitiveness.

LITERATURE REVIEW

The management of innovative activities in enterprises has been studied by numerous scholars, including A.B. Borisov, I. Stepanova, A. Ivanitskaya, N. Maksimov, S. Samal, N.K. Yuldoshev, M.L. Tursunkhodzhaev, M.S. Kosimova, S.S. Gulyamov, B.Yu. Khodiev, B.E. Toshmurodova, G.A. Khamdamova, R.H. Ergashev, S.R. Khalikov, and A.Zh. Toshboev.

Additionally, many researchers in our country have explored the development of the sericulture industry and its economic challenges. In this field, scholars such as S. Artikova, R. Israilov, D.T. Mukhamedieva, Sh. Urokov, B.K. Sharipov, and O. Zhumaev have conducted significant scientific research.

RESEARCH METHODOLOGY

In writing this article, decrees and resolutions of the President of the Republic of Uzbekistan, resolutions of the Cabinet of Ministers, and scientific works of both foreign and Uzbek scholars who have studied economic and managerial issues in the silk industry and contributed to its development were utilized. Industry-related and educational literature was also analyzed. The research methodology included theoretical and statistical analysis.

ANALYSIS AND RESULTS

Uzbekistan ranks first in the world in the production of silkworm cocoons per capita. In terms of production volume, the country ranks third after China and India. Due to the high global demand for silk products from the sericulture industry, significant attention is given to the development of this sector and the production of high-quality finished silk goods.

Currently, although silk products manufactured in more than 60 countries account for only 0.2% of the world's textiles, silkworm cocoons are cultivated in just 20 countries. According to UN statistics, the global export of raw silk is approximately 4–5 thousand tons per year, with a turnover of about 450–500 million dollars. The demand for silk products in the global market remains high [3]. This highlights the necessity of addressing key challenges such as improving the quality of silk products, introducing innovations in production, and enhancing industry management.

However, an analysis of industry development in our region, along with the results of scientific research and their implementation in production, allows for an optimistic outlook regarding the efficiency and revival of sericulture. In China, Japan, India, and other traditional sericulture countries, silkworms are fed multiple times—up to 4–8 cycles. In contrast, Uzbekistan has historically practiced single-cycle feeding, which has significantly hindered industry growth. Several factors contribute to this issue, including the absence of a well-developed feed base, limited mechanization and automation in key technological processes, and the underestimation of the industry's significance and potential by policymakers. As a result, there has been a lack of interest among workers, given that the labor-intensive, predominantly manual work in this sector generates income for only about three months a year [4].

The lack of technical resources in key processes such as production, preparation, and distribution of feed for silkworms, as well as feeding, primary processing of cocoons, and outdated technologies that fail to incorporate new equipment, hinder the advancement of sericulture. The complexity of technological processes requires highly qualified specialists with years of experience, yet this demand is often unmet due to low wages, high staff turnover, and the predominance of manual, inefficient labor.

Despite significant progress, much remains to be done by scientists and industry specialists. However, the widespread implementation of already developed, successfully tested, and applied innovations in some farms can significantly enhance the technical level of the industry, reduce labor costs, lower production expenses, and improve product quality.

Globally, sericulture remains one of the least mechanized branches of agriculture. This is primarily due to industry-specific challenges, the availability of cheap labor in countries with traditional sericulture, and the technical difficulties of working with a living biological product. Enhancing the national economic significance of the sector requires improving innovative technologies for silkworm silk and cocoon production through the comprehensive mechanization of key sericulture processes.

The activities of the Uzbekipaksanoat Association have gradually transitioned to a cluster-based production model. Sericulture clusters now include enterprises involved in silkworm seed production, cocoon processing, silk fabric and finished product manufacturing, as well as farms and dehkan farms engaged in cocoon cultivation.

The main functions of sericulture clusters are as follows: creation of infrastructure for production; modernization of technological lines in the development of drying systems and primary processing of cocoons; establishment of new mulberry plantations and reconstruction of existing ones using advanced methods; organization of silk cocoon production; organization of primary processing and spinning of silk fiber; development of a system for the production of finished fabrics from silk fibers; establishment of a system for the production of silk carpets; creation of a marketing system for selling silk products from cluster enterprises in both foreign and domestic markets.

It is known that the cluster system is a newly introduced concept in the national economy. The main goal of organizing clusters in the silk industry is to enhance economic efficiency, ensure permanent employment for the regional population, and establish a value chain within the industry [5]. Currently, there are 76 sericulture clusters operating within the association, and the industry's production indicators are growing annually. However, according to the Uzbekipaksanoat Association, the existing silkworm breeding enterprises in the country can only meet 45% of the demand from sericulture enterprises. The silk yield in Uzbekistan is 55–56 kg per box of silkworms, whereas this figure in China and India reaches 80–85 kg.

In 2022, sericulture exports were as follows: raw silk -23.4%, silk fluff 49.4%, silk yarn 0.2%, and silk fabrics 27.0%. Currently, about 72% of the Republic's silk products undergo only primary processing before being exported [9]. This highlights challenges in establishing deep processing mechanisms for cocoons. To address these issues and modernize existing silkworm enterprises, it is necessary to fully utilize available production capacities, diversify activities within the sector, increase investment efficiency, and strengthen competitiveness in the global market by producing high-quality, finished silk products. Therefore, conducting scientific research

on improving the management of innovative activities in silkworm enterprises is crucial for the sustainable development of Uzbekistan's sericulture industry [6].

The introduction of a cluster system in the sericulture industry, along with the expansion of cocoon production and deep processing to manufacture high value-added, export-oriented finished products, necessitates innovative management. At the same time, rapidly changing global market conditions and the growing demand for silk products in the international market highlight the need for the integration of scientific and technological advancements to ensure the strategic development of the sericulture industry in our republic. Special attention should be given to organizing innovative activities in enterprises and applying modern methodologies to enhance the competitiveness of industry-related businesses.

Innovative activity encompasses a set of scientific, technological, organizational, financial, and commercial measures aimed at commercializing accumulated knowledge, technologies, and equipment [7]. The outcome of such activities is the development of new or improved goods and services with enhanced qualities. According to the Law of the Republic of Uzbekistan "On Innovative Activity," innovation involves the creation of new developments as well as their transfer and implementation in the production sector [1]. Innovative activity that includes capital investments in innovation is referred to as innovation and investment activity [8].

The primary objectives of innovation activities in sericulture clusters include the development of new types of silk products, the improvement of existing ones, the identification of key directions for scientific, technical, and production activities of enterprises, and the further modernization of production to achieve high profitability.

The effectiveness of innovation activities is closely linked to the application of innovative management methods based on fundamental management principles. To achieve this, it is essential to create an environment that encourages the search for and implementation of innovations within enterprises. Innovation efforts should be aligned with consumer demand, and the number of management levels should be reduced to accelerate the "research–production–sale" process. Additionally, it is crucial to shorten the time required for the development and implementation of innovations by addressing innovation-related challenges simultaneously and in parallel.

In the sericulture industry, innovative management involves organizing innovation processes through the integration of science, production, investment, and sales. It also encompasses the management of organizational structures and personnel engaged in these processes, applying an innovation-driven approach. The effectiveness of management is ultimately determined by the efficiency of the methods used in these processes.

CONCLUSION AND RECOMMENDATIONS

The key objectives and priority areas for the development of sericulture through innovative activities include establishing effective collaboration with relevant government bodies and local executive authorities to allocate additional irrigated land, thereby strengthening the industry's forage base; supporting member organizations of the Association in the creation and implementation of highly productive silkworm breeds and ensuring the production of high-quality silkworm seeds; determining the projected regional volumes of silkworm cocoon cultivation across the republic, as well as placing orders for cocoon cultivation in coordination with procurement and processing organizations; organizing the production and procurement of high-quality silkworm cocoons, ensuring their primary processing, modernizing existing facilities, and establishing new capacities for raw silk and silk yarn production; enhancing production efficiency to increase output and improve the quality of finished silk products, expanding their most in-demand assortments and designs, ensuring certification and standardization in compliance with international requirements, and widely implementing modern quality management methods; conducting marketing research to expand sales markets, developing proposals for optimizing the pricing mechanism for silk products, and increasing the export volume of finished silk goods; coordinating the implementation of adopted development programs for the silk industry by consistently executing a unified scientific, technical, technological, investment, and export policy while monitoring price trends in both domestic and international markets.

Ensuring the development of the industry using innovative technologies, as well as the phased creation and development of a cluster approach system for organizational and technological processes, is essential to enhance the attractiveness of the sericulture subcomplex for domestic and foreign investors. Improving the system of supplying organizations in the silk industry with material and technical resources requires the timely allocation of coal, polyethylene, polypropylene, mineral fertilizers, and fuels and lubricants at regulated prices for production needs, as well as ensuring the uninterrupted supply of electricity and natural gas to business entities in the silk industry. The widespread introduction of modern methods of quality management, the development of a popular range and design of finished products, and ensuring their certification and standardization in accordance with international requirements are also crucial. Additionally, organizing retraining and advanced

training of personnel, along with improving and updating curricula and programs in higher educational institutions for training specialists in the silk industry, is of great importance.

To increase the efficiency of sericulture, it is necessary to transition from extensive to normal, intensive, and high technologies, enabling producers to improve quality and profitability. The measures taken to expand raw silk cultivation, increase the production of export-oriented silk products through enhanced processing, and provide employment opportunities especially for women in remote regions of the republic are vital for sustainable industry growth. At the same time, rapid changes in the global market, rising consumer demand, and the increasing interest in Uzbek silk products in foreign markets require the consistent implementation of these development measures to ensure the continued advancement of the silk industry.

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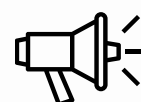
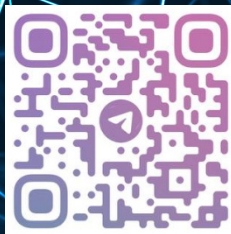
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