



THEORETICAL AND MAIN DIRECTIONS OF DEVELOPMENT AND MANAGEMENT OF INNOVATIVE SYSTEMS IN THE AGRARIAN SECTOR

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ABSTRACT

In recent decades, innovative development has become a key growth factor in the global economy. The traditional resource-based economic model is being replaced by a model based on knowledge, technology, and innovation. This process has also had a direct impact on the agricultural sector, making the modernization of the agricultural sector an urgent task.

Introduction. In recent decades, innovative development has become a key growth factor in the global economy. The traditional resource-based economic model is being replaced by a model based on knowledge, technology, and innovation. This process has also had a direct impact on the agricultural sector, making the modernization of the agricultural sector an urgent task.

Innovative activity in the agricultural sector plays an important role in increasing production efficiency, the rational use of resources, and ensuring food security.

Therefore, the formation and effective management of innovation systems is one of the priorities of today. Theoretical foundations of innovative development

The evolution of innovation management has developed in several stages:

The first stage is the technological push model, in which innovations are formed as a result of scientific discoveries.

The second stage is a model based on market demand, in which innovations are created in accordance with consumer needs.

The third stage is an interactive model, innovations develop through internal and external cooperation.

The fourth stage is an integrated model, science and production are combined.

The fifth stage is a network model, developing global innovative cooperation.

The sixth stage is a knowledge-based model, intellectual capital becomes the main resource. This evolution indicates the increasing complexity of innovation processes and their increasing integration. The National Innovation System and the Agrarian Sector. The National Innovation System (NIS) is a set of institutions involved in the creation, dissemination and implementation of innovations.

In the agricultural sector, MIT performs the following tasks:

- implementation of scientific developments in practice;
- delivery of innovative technologies to farms;
- ensuring cooperation between the state, science and business.

MIT is the main basis for the formation of an agricultural innovation ecosystem.

Agrarian innovation ecosystem

The agricultural innovation ecosystem consists of the following entities:

- research institutes;
- higher education institutions;
- farmers and agricultural firms;
- state management bodies;
- private sector and investment organizations.

The efficiency of the ecosystem depends on resource supply, institutional environment, innovation infrastructure and state support. These factors serve to quickly introduce innovations and increase economic efficiency.

World experience USA

In the USA, the innovation system is based on the integration of small businesses, venture capital and research centers. GPS, drones, precision farming and digital monitoring are widely used in agriculture. The state (USDA) actively supports innovation processes.

European Union. In Europe, the innovation cycle is formed as a complete system. The integration of science, R&D, and production is strong. Small and medium-sized businesses are supported by the state.

Japan and South Korea. In these countries, robotics, automated greenhouses, and “smart farm” systems have been widely introduced. There is a high level of integration between science and production.

Netherlands and Israel. The Netherlands has achieved high efficiency based on intensive technologies. In Israel, drip irrigation and state subsidies play an important role in water shortage conditions.

India and China. India has developed mobile applications and an agricultural education system for farmers. China, on the other hand, is increasing scientific investments and approaching global innovation leaders.

“Smart agriculture” technologies Modern agricultural development is based on the following technologies:

- Internet of Things (IoT);
- Precision Agriculture;
- Drones and GPS;
- satellite monitoring;
- robotization;
- smart greenhouses and warehouses;
- blockchain-based logistics.

As a result:

- productivity increases by 15–40%;
- water and resources are saved by 20–60%;

- production losses are reduced;
- management efficiency increases.

Development directions of the agricultural sector of Uzbekistan

Reforms are being implemented in Uzbekistan to modernize the agricultural sector.

However, there are some problems:

- low level of innovation implementation;
- weak integration of science and production;
- limited financial and technological resources.

Priority areas:

- development of digital agriculture;
- modernization of innovative infrastructure;
- expansion of public-private partnerships;
- integration of scientific research with production;
- development of a system for training qualified personnel.

Conclusion

Innovative development of the agricultural sector is one of the main trends of the global economy. World experience shows that countries with an innovative ecosystem achieve high efficiency in agriculture.

The main task for Uzbekistan is to widely introduce digital technologies, develop innovative management, and strengthen the integration of science and production. This will help increase the competitiveness of the agricultural sector and ensure food security..

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