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IMPROVING THE METHODOLOGICAL FOUNDATIONS OF STATE SUPPORT FOR AGRICULTURAL ENTERPRISES BASED ON THE PRINCIPLES OF INNOVATION MANAGEMENT



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Abstract: Agricultural enterprises play a vital role in ensuring food security and enhancing economic stability. At the same time, these enterprises operate in a dynamic environment influenced by market price fluctuations, climate-related factors, and constraints in accessing financial resources. In this context, the implementation of innovative management strategies supported by state mechanisms becomes increasingly important. This article examines methodological approaches to supporting agricultural enterprises through policy frameworks, financial incentive systems, and the effective adoption of modern technological solutions. The study highlights the role of integrated and sustainable approaches in improving the efficiency and resilience of the agricultural sector.

Key words: state support, agricultural enterprises, innovative management, financial incentives, technological development, sustainability, policy frameworks, precision agriculture, agri-tech integration, public-private partnerships.

INTRODUCTION

The agricultural sector constitutes a fundamental component of national economies, playing a significant role in employment generation and the improvement of livelihoods. At the same time, agricultural enterprises operate within a dynamic environment characterized by various risks and uncertainties, which may influence their operational efficiency.

In this context, the enhancement of state support mechanisms becomes increasingly important, as it contributes to strengthening the sustainability and competitiveness of agricultural enterprises. This paper examines the integration of innovative management strategies with state support mechanisms as a means of promoting growth, improving resilience, and ensuring the long-term development of agricultural enterprises (Figure 1).

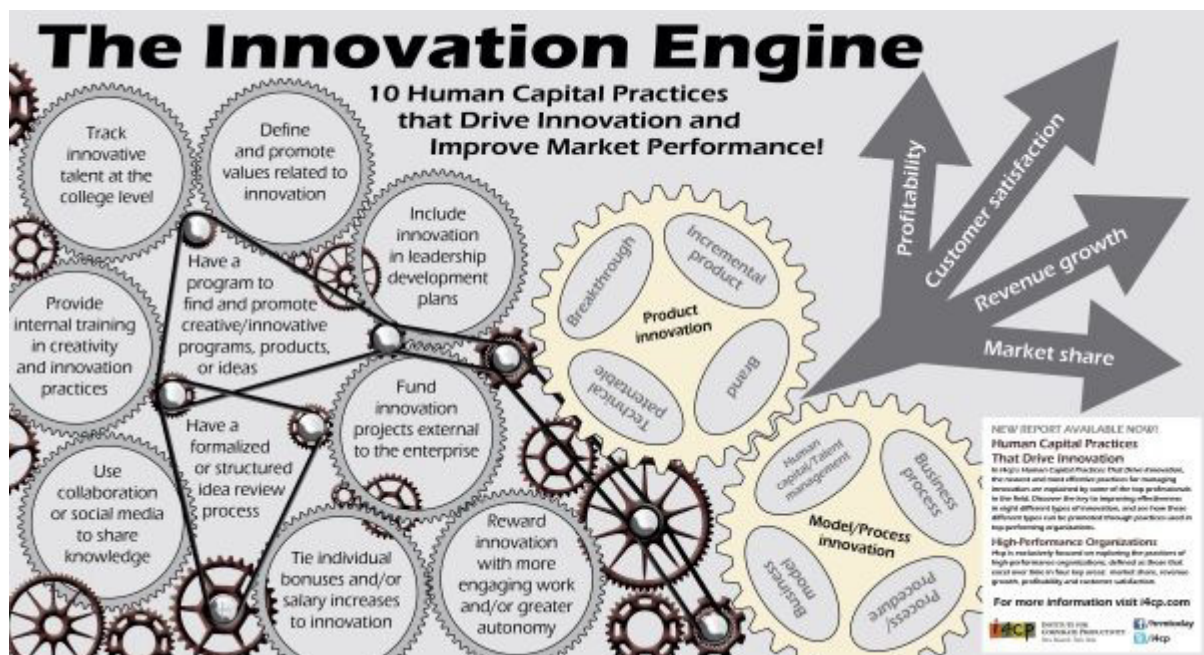


Figure 1. Innovation Engine and Human Capital Practices

This figure illustrates the role of human capital and management practices in driving innovation through a system of interconnected gears. It highlights key factors that support innovative activities, including fostering creativity, knowledge sharing, employee development, collaboration, and incentive mechanisms. These elements are shown as interdependent components that work together to enhance both product and process innovation. As a result, the effective implementation of such practices contributes to improved customer satisfaction, increased profitability, expansion of market share, and overall business growth.

LITERATURE REVIEW

The literature emphasizes that state support plays a crucial role in fostering innovation-driven development in agricultural enterprises. Innovation in agriculture is widely understood not only as a technological transformation but also as a complex socio-economic and institutional process involving multiple stakeholders.

Researchers highlight that state policies should be aligned with the principles of innovation management, including efficient resource allocation, the integration of research and production, and the strengthening of public-private partnerships. Such an approach contributes to better coordination of innovation processes and enhances their overall effectiveness.

A number of scholars have explored ways to improve state support mechanisms for agricultural enterprises through the application of innovative management principles. In particular, Zamira Shaniyazova (PhD, Associate Professor) examines the scientific and methodological foundations of state support for agricultural enterprises based on innovation management principles, with a focus on financial, regulatory, and infrastructural mechanisms, as well as international experience relevant to the context of Uzbekistan. Mirolim Djumayevich Teshayev analyzes state organizational support and development opportunities for small agribusinesses in arid regions of Uzbekistan, emphasizing the importance of targeted subsidies, digital advisory systems, and cooperative networks in enhancing productivity and resilience. Khayotbek Davlatov investigates the improvement of financial support for agricultural innovation in Uzbekistan, highlighting the role of public-private partnerships, targeted financial incentives, and the integration of research institutions with farming communities in promoting innovation. In addition, A. Kobilov evaluates the effectiveness of state-supported programs in agricultural enterprises, identifying policy-driven initiatives and their positive impact on enterprise performance.

From an international perspective, although studies focusing on exactly the same theme remain relatively limited, broader research provides a strong conceptual foundation. Existing studies on the methodological and scientific bases of state support for agricultural innovation demonstrate that government mechanisms should incorporate innovation management frameworks to effectively respond to globalization and technological change. Furthermore, research on sustainable agricultural innovation systems, including comparative analyses of state-owned and private enterprises, reveals important interactions between innovation performance and public policy, offering valuable insights for the further development and refinement of methodological approaches.

RESEARCH METHODOLOGY

State support for agricultural enterprises can be systematically categorized into financial, infrastructural, and regulatory frameworks, each of which plays a significant role in enhancing the efficiency and sustainability of the agricultural sector. Financial support mechanisms include the provision of subsidies and grants aimed at facilitating technological adoption, the availability of low-interest loans and accessible credit facilities for farmers, as well as tax incentives designed to encourage agribusiness investments.

In addition, infrastructural and technological support focuses on the development of modern irrigation systems and storage facilities, the promotion of digital agriculture and smart farming techniques, and the establishment of research centers and innovation hubs that foster knowledge transfer and technological advancement.

Furthermore, regulatory and institutional frameworks emphasize the implementation of policies that promote sustainable farming practices, the strengthening of cooperative movements and farmer associations, and the enhancement of land tenure security and property rights, thereby creating a stable and supportive environment for agricultural development (Figure 2).

The Afi strategy framework

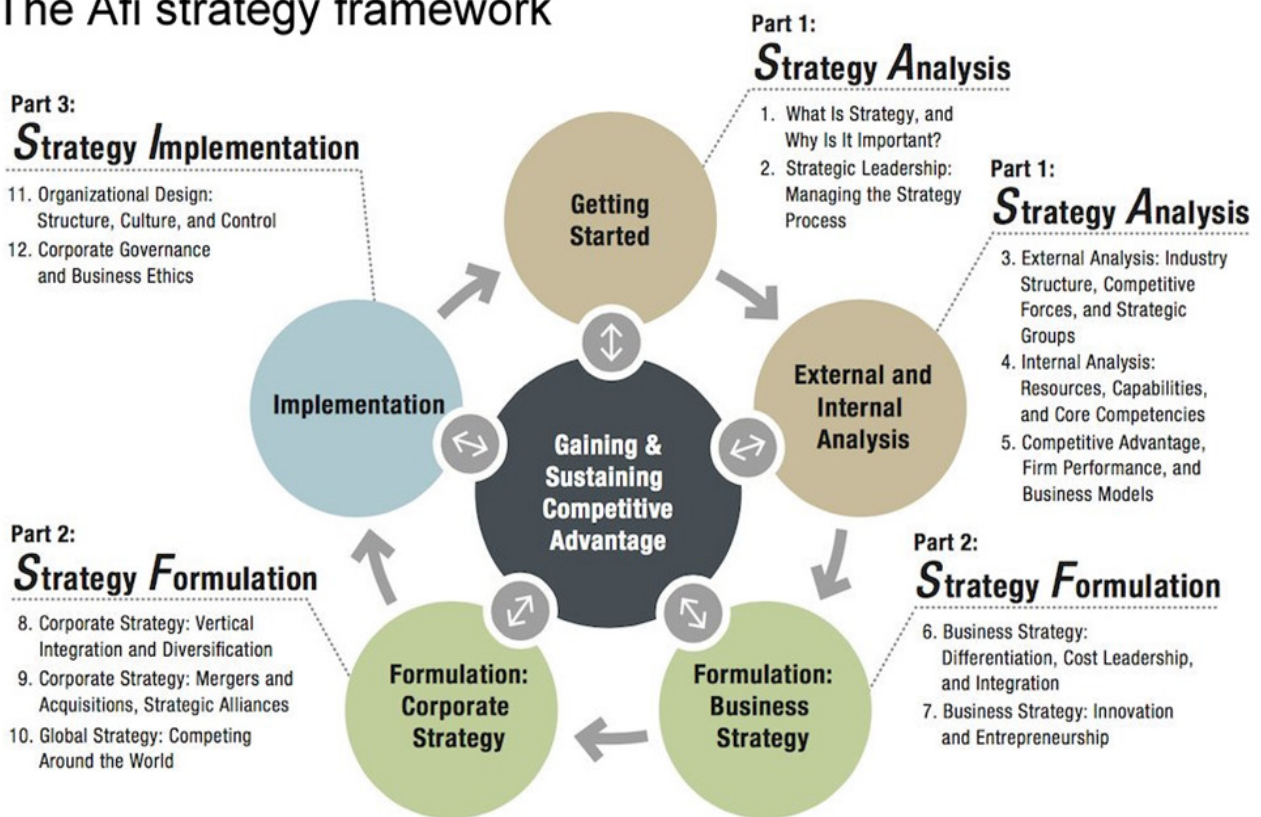


Figure 2. AFI Strategy Framework: Achieving and Sustaining Competitive Advantage

To maximize the effectiveness of state support, agricultural enterprises should adopt innovative management strategies that enhance efficiency, sustainability, and competitiveness. In this context, precision agriculture plays a key role by utilizing data analytics, the Internet of Things (IoT), and artificial intelligence (AI) to optimize resource use and increase productivity. At the same time, the implementation of sustainable farming practices, including environmentally friendly approaches such as organic farming and crop rotation, contributes to long-term ecological balance and improved agricultural outcomes.

Furthermore, market diversification enables enterprises to expand their product portfolios and explore new markets, thereby strengthening economic stability and reducing reliance on a single commodity. The integration of agri-tech solutions, such as the use of blockchain technology for supply chain transparency and automation for operational efficiency, further enhances performance and innovation capacity. In addition, the development of public-private partnerships (PPP) facilitates collaboration with private sector stakeholders, providing greater access to advanced technologies, investment resources, and managerial expertise (Figure 3).

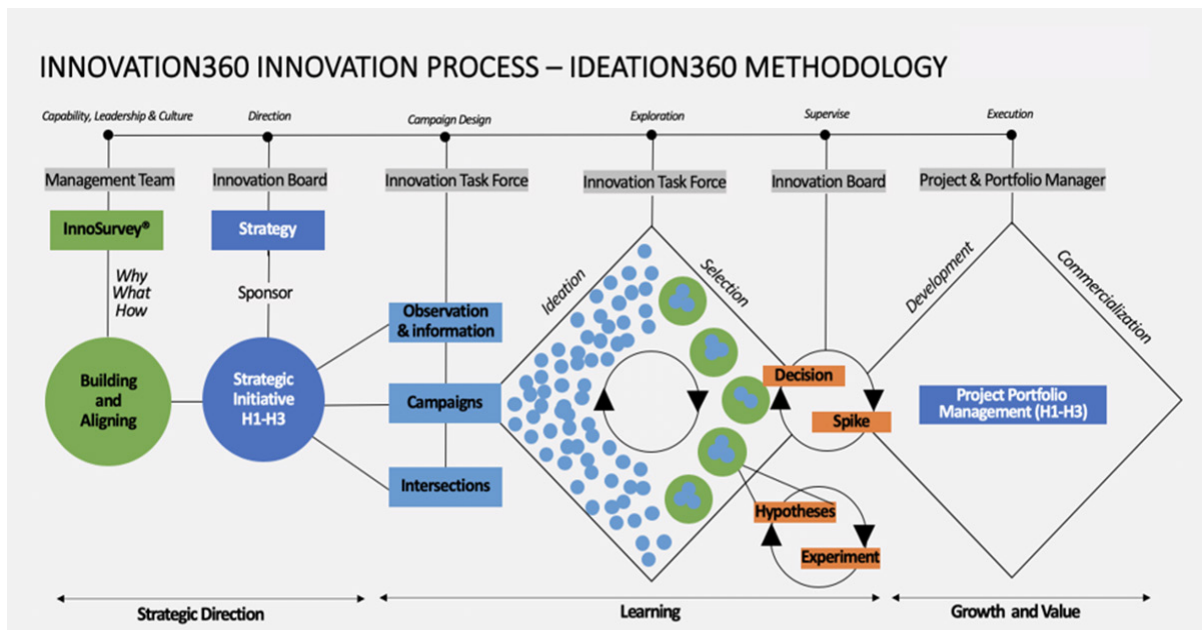


Figure 3. Innovation360 Process: Ideation360 Methodology for Strategic Innovation Management

This figure presents the Innovation360 Ideation360 methodology as a structured and dynamic process for managing innovation from strategic alignment to execution. It illustrates how organizations move from defining strategic direction and generating insights through observation, campaigns, and intersections, to exploring ideas via iterative cycles of hypotheses, experimentation, and decision-making. The model emphasizes collaboration among management teams, innovation boards, and task forces, integrating learning and supervision throughout the process. Ultimately, the framework highlights how systematic innovation practices lead to effective project portfolio management, commercialization, and the creation of sustainable growth and value.

ANALYSIS AND RESULTS

While various state support initiatives have contributed to the development of the agricultural sector, certain structural and organizational factors may limit their full effectiveness. In particular, administrative complexities, gaps in infrastructure development, and a relatively slow pace of innovation adoption can influence overall sectoral performance.

To address these aspects, it is important to further streamline administrative procedures in order to improve access to financial resources and enhance institutional efficiency. In addition, the expansion and modernization of rural infrastructure play a key role in supporting the implementation of advanced agricultural techniques. Furthermore, the organization of awareness and capacity-building programs can significantly facilitate the adoption of modern technologies among farmers, thereby strengthening productivity, resilience, and long-term sustainability in the agricultural sector (Table 1).

Table 1. Indicators for Evaluating State Support for Innovation in Agriculture¹

Indicator	Description	Target	Evaluation Method
Adoption Rate of New Technologies	The percentage of agricultural enterprises adopting new technologies such as precision farming tools.	30% increase in adoption within 5 years.	Surveys of farmers and agricultural enterprises, statistics on technology adoption.
R&D Investment	The amount of government and private sector funding directed towards agricultural R&D.	Increase by 20% annually.	Statistical data on public and private sector R&D investments in agriculture.
Farmer Digital Literacy	The percentage of farmers with digital literacy skills.	50% of farmers trained in digital tools.	Training programs, survey results.

¹ Created by author.

Indicator	Description	Target	Evaluation Method
Agricultural Productivity	The percentage increase in crop yields and livestock production due to innovative technologies.	15% increase in productivity within 3 years.	Agricultural production statistics, yield data.
Access to Financing	The availability and uptake of government loans or subsidies for technology adoption.	20% increase in financing programs for SMEs.	Analysis of participation in government support programs, loan data.
Sustainability Metrics	The adoption of sustainable farming practices and technologies that reduce environmental impact.	25% increase in sustainability practices.	Assessment of environmental impact, use of sustainable farming methods.

This diagram illustrates how different types of government support impact innovation and sustainability in agriculture (Figure 4).



Figure 4. Impact of Government Support on Agricultural Innovation and Sustainability

The outcomes of state support programs are increasingly reflected across various agricultural sectors, where the adoption of innovative approaches has contributed to enhanced productivity, sustainability, and market competitiveness. In particular, regions implementing comprehensive state policies that promote research and technological advancement demonstrate notable progress in agricultural output and environmental stewardship. At the same time, further opportunities exist to strengthen access to financing and modern technologies in rural areas, thereby ensuring more balanced and inclusive development.

The adoption of advanced technologies, including precision farming tools such as automated irrigation systems and data-driven crop management solutions, has enabled farmers to achieve higher yields while optimizing input use. These technologies contribute not only to improved productivity but also to the efficient use of resources such as water and fertilizers, supporting long-term sustainability objectives.

Moreover, government investments in agricultural research and development (R&D) have facilitated the creation of crop varieties resistant to pests and diseases, as well as the advancement of post-harvest

technologies. Continued expansion of R&D initiatives, particularly those focused on climate-resilient agricultural solutions, can further enhance innovation capacity within the sector.

In addition, training programs and digital literacy initiatives have significantly strengthened farmers' ability to understand and effectively apply modern technologies. Expanding such programs, especially in remote areas, can further accelerate the adoption of digital tools and support the development of a more technologically integrated agricultural system.

Furthermore, state-supported financial instruments, including loans and subsidies, have played an important role in enabling farmers to invest in advanced equipment. Enhancing the accessibility of low-interest loans and grant programs, particularly for small and medium-sized enterprises (SMEs), can further broaden the adoption of innovation and contribute to the overall resilience and competitiveness of agricultural communities.

CONCLUSIONS AND RECOMMENDATIONS

The implementation of innovation management strategies in agriculture plays a pivotal role in enhancing productivity, sustainability, and overall economic growth. In this context, state support serves as a key driving force for innovation by facilitating access to financial resources, promoting research and development (R&D), and improving farmers' skills as well as their access to modern technologies.

To further strengthen these processes, it is essential to develop comprehensive and long-term policy frameworks that clearly define strategic priorities related to sustainability, productivity enhancement, and technological adoption, while also encouraging effective public-private partnerships and integrating technology-oriented initiatives across different agricultural sectors. In addition, increasing both public and private investment in agricultural R&D remains crucial for the development of advanced technologies capable of addressing challenges such as climate variability, resource efficiency, and food security, with particular emphasis on improving resilience and operational effectiveness.

Furthermore, expanding access to financial resources, especially for small and medium-sized enterprises (SMEs), through low-interest loans, subsidies, and grant programs can significantly enhance the ability of farmers to adopt modern technologies. At the same time, the development of tailored financial instruments designed specifically for innovative agricultural practices can further support sectoral transformation. Alongside financial measures, the promotion of digital literacy and the implementation of large-scale training programs are essential to ensure that farmers are able to effectively utilize modern agricultural technologies, supported by extension services that provide practical guidance.

Moreover, strengthening collaboration between public institutions, research organizations, and private sector stakeholders is fundamental to building a dynamic and sustainable innovation ecosystem. Such cooperation can accelerate the development, dissemination, and adoption of scalable and accessible technological solutions across the agricultural sector.

Overall, the consistent implementation of these strategies can significantly contribute to transforming agriculture into a more innovative, sustainable, and competitive sector, thereby supporting farmers, rural communities, and the broader economy.

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