

## Study on the Strategic Alliance of Technological Innovation of Agricultural Enterprises in Heilongjiang Province of China

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**Keywords:** Agricultural enterprises, Technological innovation, Strategic alliance, Heilongjiang Province

**Abstract:** Heilongjiang Province is one of the major agricultural provinces in China, and the construction of its strategic alliance of agricultural enterprises has not formed in the large scale and the development is not ideal. On the basis of analyzing the current situation and existing problems of the strategic alliance of technological innovation of agricultural enterprises in Heilongjiang Province, the paper puts forward the corresponding countermeasures to ensure the healthy development of the alliance, including strengthening the guidance and support of the government, formulating relevant laws and regulations of agricultural technology innovation, establishing the communication platform, encouraging financial institutions to provide diversified financing support and services, improving the fiscal support and tax relief policies, speeding up the cultivation of talent team of strategic alliance.

### 1. Introduction

The strategic alliance of technological innovation is a cooperative organization of technological innovation with joint research and development, complementary advantages, shared interests and shared risks. It is guided by the government to enterprises, colleges and universities, scientific research institutes or other organizations, based on the development needs of enterprises and the common interests of all parties, guaranteed by legally binding contracts, and aimed at improving the ability of industrial technology innovation. The strategic alliance of technological innovation can solve the problem of technological innovation for enterprises. It is an organization of technological research with enterprises as the main body which is promoted by the government through the market mechanism. Enterprises, Universities and scientific research institutions jointly develop technology, formulate technical standards and promote technology. Enterprises directly participate in market competition, which is the main force of the industrialization of technological innovation achievements. Only when the enterprise is also the main body of technology research and innovation, can the problem of the disconnection between science and technology and economy be solved. Practice at home and abroad has proved that the industry-university-research cooperation innovation mechanism with the enterprise as the main body and the market as the guidance is an effective way to improve the industrial technology innovation ability.

Heilongjiang Province, as a major agricultural province in China, faces many problems in the process of agricultural industrialization. Among them, the construction and development of strategic alliance of agricultural technology innovation can break the boundary, effectively integrate resources, information and services among agricultural production and operation enterprise, colleges and universities, scientific research institutes. It is an important measure to solve the problems of agricultural scientific and technological progress and industrial development by establishing a collaborative innovation mechanism, jointly breaking through major common technologies, rapid industrialization of innovation achievements, and further promoting the close integration of industry-university-research and agriculture-science-education. Generally speaking, the construction of technological innovation strategic alliance of agricultural enterprises in Heilongjiang Province started late and has not formed a large scale. In order to improve the overall competitiveness of agriculture and speed up the development of agricultural industrialization, the

development of technological innovation strategic alliance needs to be accelerated, which is also the key to improve the level of agricultural technological innovation in Heilongjiang Province

## **2. Current Situation of the Strategic Alliance of Technological Innovation of Agricultural Enterprises in Heilongjiang Province**

### **2.1 Weak Multi-faceted Synergy in the Ddevelopment of Strategic Alliance**

Because the members of the strategic alliance of agricultural technology innovation come from different units, often involving education, scientific research, enterprises and government departments, so the formation and operation of the alliance need the guidance of the government by making the strategic planning. The members of the alliance are affiliated with different management departments, and the cooperation between the members of the alliance involves personnel exchange, technology research and development, product design, processing and production, marketing and other links. There are many uncertain factors in the formation and operation of the alliance, and there are many contradictions between the operation of the alliance and the existing management system and mechanism, involving many management departments such as development and reform, science and technology, finance, industry and information technology, civil affairs, industry and commerce, taxation and audit. In order to achieve the goal of improving industrial technology innovation ability, the alliance must cooperate with multiple departments. At present, the government departments in Heilongjiang Province still need to strengthen their attention in this aspect.

### **2.2 Imperfect Laws and Regulations of Strategic Alliance**

The relevant laws and regulations on the strategic alliance of agricultural technology innovation are not perfect in Heilongjiang Province, and the legitimate rights and interests of the members of the alliance cannot be fully protected. Failure to create the good protection environment based on laws and regulations will lead to opportunistic behavior and reduce the trust among alliance members. In addition, the incentive regulations for technological innovation of enterprises are not perfect, there are few activities to guide and encourage enterprises to carry out technological innovation under the agricultural strategy of Heilongjiang Province, and the development environment for enterprises, universities, scientific research institutes and intermediary agencies to actively participate in the alliance needs to be improved. In Heilongjiang Province, there are not enough policies about the strategic alliance of agricultural technology innovation, lack of special policies. Moreover, the existing policies mainly tend to macro guidance and involve fewer specific problems, which can not effectively promote the rapid development of the strategic alliance. As the strategic alliance of agricultural technology innovation has just developed, it is restricted by its own conditions and management system. Under the realistic conditions, the difficulty of agricultural technology innovation is still prominent, which to some extent restricts the development of agricultural industrialization.

### **2.3 Shortage of Human Resources to Support the Development of Strategic Alliance**

The strategic alliance of agricultural technology innovation in Heilongjiang Province is relatively short of professional talents, especially the high-end talents. The members of implementing the strategic alliance are lack of understanding, research and mastering the operation rules of the alliance. This is mainly due to the fact that the scale of the strategic alliance of agricultural technology innovation is still limited, there are not enough professional talents studying the problems of the alliance, and there is no institution to train the specialized talents of the alliance. China's universities have a wide range of specialties, but none of them have set up the major of strategic alliance operation. Full-time staff in the executive branch (secretariat) of the alliance is also lacking. Because the alliance does not have the independent legal person status, is not the economic subject, the alliance itself cannot support more full-time personnel. The managers in the alliance seldom conduct in-depth studies on how the alliance operates and develops under the new

normal of the economy, the activities of the alliance are not active enough, the innovative, targeted and long-lasting work is not powerful, and the management of the alliance is inexperienced, thus restricting the advantages of the alliance.

#### **2.4 Lack of Funds for Agricultural Scientific Research in the Strategic Alliance**

The research and development of agricultural technology has the long periodic characteristics, the innovation activities of the strategic alliance of agricultural technology generate slower returns, and need a lot of capital investment. The agricultural technology innovation alliance is not a legal entity and has no qualification for loans. The alliance itself cannot obtain loans from the financial sector or independently cooperate with other sectors to absorb social funds. The operating expenses of the alliance are either jointly funded by the alliance members or exclusively funded by the leading enterprise, and the expenses are relatively limited. In recent years, the investment in agricultural scientific research in Heilongjiang Province has increased by a large margin, but there is still a big gap with the demand for agricultural development, and the support for agriculture is lower than that of non-agricultural industries. In addition, most of the investment in agricultural research in Heilongjiang Province is for applied research, and a small part is for basic research. Because basic research involves the potential of agricultural research, the shortage of funds leads to the lack of aftereffect of agricultural technology innovation.

#### **2.5 Limited Capacity for the Technological Innovation of Agricultural Enterprises**

Due to problems such as unimproved basic conditions for scientific research and backward R & D equipment, there are few independent R & D technologies in agricultural industry of Heilongjiang Province, and most core technologies rely on technology transfer. As a result, most agricultural enterprises have weak product diversity, small scale of innovation activities and low economic benefits. The vast majority of agricultural enterprises have the problem that the R & D institutions are not perfect. In general, the technological innovation ability of agricultural enterprises in Heilongjiang Province is far lower than that of universities and scientific research institutes. Compared with industrial enterprises, the number of agricultural enterprises in Heilongjiang province still needs to be increased, and the number of listed enterprises is even less. Limited by the talents and funds, the main demanders of agricultural technology do not fully participate in the technological innovation activities, and the agricultural technological innovation is mainly based on colleges and universities and scientific research institutes. This leads to the fact that both the supply and demand sides cannot complete the technology transaction through the market mechanism, further resulting in the disconnection of industry-university-research. A large number of agricultural scientific and technological achievements have been put on the shelf, staying in the innovation stage, unable to realize the industrialization of agricultural technology application, which has affected the development of agricultural enterprises and the overall competitiveness of agricultural industry.

### **3. Countermeasures to Speed up the Development of Technological Innovation Strategic Alliance of Agricultural Enterprises in Heilongjiang Province**

#### **3.1 Strengthening the Guidance and Support of the Government to the Strategic Alliance**

The construction of the strategic alliance of agricultural technology innovation is a systematic work, and the government behavior has a very important influence on the formation and operation of the alliance. The government departments of Heilongjiang Province should strengthen their own functions, actively and effectively guide and support the construction of the alliance, and create the favorable policy and market environment for the development of the alliance. Government departments can make strategic plans to guide the formation and operation of strategic alliance of agricultural technology innovation. As the members of the alliance are under the charge of different departments, the cooperation among members involves technology research and development, production and processing, storage and transportation, marketing and other links, which increases

the complexity and uncertainty of the formation and operation of the alliance. In order to ensure the effective operation of the alliance, it is necessary for the multi departments to work together. The realization of the above objectives can not be separated from the correct guidance of government departments. In terms of supporting the alliance, the government needs to keep pace with the times, provide corresponding help and environment from the aspects of macro-control, policy guidance and financial support, so as to create favorable conditions for the smooth operation of the alliance. In a word, the government departments of Heilongjiang Province should promote the cooperation among the members of agricultural technology innovation alliance through various forms and channels.

### **3.2 Formulating Relevant Laws and Regulations of Strategic Alliance of Agricultural Technology Innovation**

In order to protect the legitimate rights and interests of the strategic alliance of agricultural technology innovation, and to better protect the achievements of technological innovation, it is necessary for Heilongjiang Province to formulate relevant laws and rules with strong pertinence, and severely punish the cheating and illegal behaviors in the alliance. Relevant laws and regulations further clarify the intellectual property generated in the R & D project of the strategic alliance of agricultural technology innovation, so as to better formulate the income distribution plan. The legally effective agreement signed by the members of the alliance is the important basis for the distribution of interests, risk-taking and ownership of intellectual property rights, and is the key to ensure the successful operation of the alliance. The establishment of the alliance agreement should be as clear and operable as possible. The alliance agreement should first stipulate the objectives, member tasks, operation mechanism of the alliance, and formulate project management methods, financial management measures and other documents related to the operation of the alliance. Moreover, the terms of the alliance agreement should clearly define the risk control and commitment of research and development failure, technology leakage, market changes, etc., and protect the interests of technological innovators from infringement in the process of technology transfer. In addition, in view of the problems in the operation of the alliance, the agreement should be supplemented in time to provide the good guarantee for the sustainable and stable development of the alliance from the institutional environment.

### **3.3 Establishing the Communication Platform for Strategic Alliance of Agricultural Technology Innovation**

The cooperative innovation of technology between agricultural production and operation enterprises and R & D institutions involves investment and financing, technology research and development, mid-term test, achievement transformation, marketing management and other stages. Due to information asymmetry and other reasons, alliance members are prone to disputes and frictions, which affect the efficiency of technical innovation. It is the cornerstone of the stable development of the alliance to strengthen the effective communication between colleges and universities, scientific research institutes and agricultural enterprises and to build the communication platform. First of all, through the establishment of information interflow, technical communication, personnel exchange and other systems, the sharing of knowledge and experience among alliance members can be strengthened. Secondly, the cooperative learning platform of the alliance should be established to accelerate the flow of innovative knowledge among alliance members through formal learning forms such as lectures, reports and informal learning forms such as discussions and seminars, so as to promote the industrialization of innovative achievements as soon as possible. In addition, the alliance also needs to establish the platform to coordinate conflicts and deal with disputes, so as to properly handle the friction among the members of the alliance, enhance mutual trust, and finally realize the win-win situation of strategic alliance of technological innovation.

### **3.4 Encouraging Financial Institutions to Provide Diversified Financing Support and Services**

The science and technology departments of Heilongjiang Province should work with relevant

departments to create the economic environment which is conducive to the development of the alliance, such as guiding the capital market to give full play to its important role, promoting the combination of science and technology and finance, broadening financing channels, innovating financial products, and increasing financial support for technical innovation of alliance members. Specifically, priority or low interest loans can be given to strategic alliance projects of agricultural technology innovation; Major commercial banks make full use of financial instruments such as financial leasing, buyer's credit and seller's credit to support and participate in the operation of the alliance; Major commercial banks make full use of financial instruments such as financial leasing, buyer's credit and seller's credit to support and participate in the operation of the alliance; strengthen the pertinence of financial policies, encourage major commercial banks to develop and promote financial products such as intellectual property rights and equity pledge loans; give the preferential policies to alliance enterprises for listing financing; accelerate the cultivation and improvement of science and technology insurance market, and actively develop suitable Insurance products of agricultural science and technology innovation to transfer the risk of technological innovation of the alliance.

### **3.5 Improving the Fiscal Support and Tax Relief Policies of Strategic Alliance**

The government fiscal and taxation departments of Heilongjiang Province should establish and perfect the stable growth mechanism of fiscal investment in science and technology, incline the limited R & D funds to the strategic alliance of agricultural technology innovation, and improve the fiscal support, tax relief and other policies related to agricultural technology innovation. For example, the fiscal support or reward should be given to the newly established alliance; the subsidy for key technologies and joint R & D in the important agricultural fields should be increased, and special guiding funds should be set up; the alliance should be supported to set up innovation platforms such as agricultural technology R & D center and key laboratory; the preferential tax policies should be given to the innovation income obtained by enterprises actively participating in the agricultural technology innovation alliance, such as pre tax deduction, tax credit, accelerate depreciation, withdraw technical reserves, etc.

### **3.6 Speeding Up the Cultivation of the Talent Team of Agricultural Technology Innovation**

The staff in the agricultural technology innovation alliance are all high-end professionals. We need to introduce the experts and scholars of various disciplines, so as to put forward the better projects and plans under the joint efforts of technological innovation talents in various fields, and comprehensively improve the innovation ability of industrial technology. Increasing the incentive and funding of innovative talents in Heilongjiang Province is conducive to the in-depth study of technical problems, so as to improve the application ability of agricultural scientific and technological innovation. In addition, the alliance is generally managed by one of its members as the chairman of the board or by the social intermediary. The management organization of the alliance should build the high-quality professional management team. On the one hand, it is necessary to continuously increase the innovation awareness of the management team, formulate the management mechanism of internal operation conducive to the development of the alliance, safeguard the interests of each member of the alliance, and fully mobilize the enthusiasm of member enterprises; on the other hand, the service consciousness of the management team should be cultivated. As the management organization of the alliance, the efficiency of handling the affairs of the alliance should be constantly improved in line with the principle of serving the members of the alliance.

## **4. Summary**

This paper studies how to promote the development of strategic alliance of technological innovation of agricultural enterprises in Heilongjiang Province. Generally speaking, the agricultural science and technology resources of Heilongjiang Province are scattered, the conversion rate of agricultural technology achievements is low, and the development of strategic alliance of

technological innovation is not ideal. The problems such as weak multi-faceted synergy in the development of strategic alliance, imperfect laws and regulations, shortage of human resources to support the development, lack of funds for agricultural scientific research, and limited capacity for technological innovation of agricultural enterprises have become the bottleneck of the development of strategic alliance of technological innovation. This paper puts forward the corresponding countermeasures to solve the dilemma of strategic alliance of technological innovation of agricultural enterprises in Heilongjiang Province. The research in this paper is helpful to speed up the development of the strategic alliance of agricultural technology innovation, and enhance the ability of agricultural resource convergence and technological innovation in Heilongjiang Province. The strategic alliance of agricultural technology innovation can not only promote the reform of agricultural scientific research system, but also integrate advantageous resources, greatly improve the transformation ability and application efficiency of scientific and technological achievements, which is of great significance for the development of modern agriculture in Heilongjiang Province. It is also a very important measure to solve the disconnection between agricultural science and technology and industrial development, establish the collaborative innovation mechanism, jointly break through major common technologies, and rapidly realize the industrialization of agricultural innovation achievements.

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