

# *Research on the Construction of Rural Innovation Industry Ecosystems from the Perspective of Value Co-Creation Theory*

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**Abstract:** The rural innovation industry, serving as a pillar industry supporting the economic development of regional rural areas, is the cornerstone and guarantee for achieving the strategic goals of rural revitalization. This research, centered around the theory of value co-creation, focuses on the construction of the rural innovation industry ecosystem in Jilin Province. By analyzing the current theoretical achievements in the construction of rural innovation industry ecosystems and combining them with field surveys on the construction of rural innovation industry ecosystems in Jilin Province, this study highlights critical issues, including irrational industrial planning and construction, insufficient industrial integration and development, lagging industrial system development, and loose market relationships among farmers. Consequently, this study proposes the construction ideas for the rural innovation industry ecosystem from four perspectives: rural industry development planning, integrated and mutually beneficial rural industry development, technology-driven construction of rural innovation industry systems, and market-oriented promotion of rural industry revitalization.

## 1. Introduction

The theory of value co-creation was proposed by Prahalad and others from an economic perspective in the early 21st century and has since evolved into a widely applied theory across various industries <sup>[1]</sup>, becoming a popular research hotspot. With the development of the rural economy, the concept of "value co-creation" has gradually been applied to the study of rural innovation industries. Under the support of the value co-creation theory, the main actors in rural "co-creation" include the government, village collectives, villagers, enterprises, technology, and capital, all of which are interconnected. These stakeholders collaboratively create value for various industries under policy guidance. The value co-creation theory effectively integrates resources, promoting the construction and development of rural innovation industry ecosystems, which is significant for the development of rural innovation industries.

Guided by the value co-creation theory, achieving symbiotic relationships among multiple actors is crucial for the development of rural ecosystems. This reflects a new mode of industrial development and layout, gaining attention from society, academia, and various groups. In the innovative development of rural ecosystems, the central ecological niche should be the primary development direction, assuming greater responsibilities. As an agricultural province in the northeast, Jilin Province must uphold the importance of agricultural development, innovate agricultural industries, and build rural innovation industry ecosystems. This involves accelerating the construction of modernized agricultural bases, large enterprises, and industries, promoting the technologization, informatization, and digitization of agricultural industries. Extending the agricultural industry chain, enhancing the value chain, and creating a new model of agricultural industry ecosystems will promote agricultural development, increase farmers' incomes, and achieve economic growth.

## **2. Accumulation of Experience in Integrating Value Co-Creation into the Development of Rural Innovation Industry Ecosystems**

### **2.1 Retrospective on the Construction of Rural Innovation Industry Ecosystems**

In recent years, national attention has focused on rural construction and development, resulting in numerous studies and implementation plans centered on rural revitalization. A critical aspect of rural revitalization is the development of rural industries, which has consistently been a primary research focus. Summarizing these studies, we can categorize them into three main types: 1. Research on the Current State of Rural Industry Development: This category often employs social surveys, visits, and data compilation to summarize common issues, regional problems, and intrinsic challenges in current rural development. By understanding these issues, researchers seek solutions and, through normative studies, thoroughly analyze future development directions, envisioning both the present and future of rural industry development. 2. Research on Rural Industry Development Models and Paths: This research type typically involves in-depth analysis of one or more classic cases to explore rural industry development models. For instance, Hu Weiwei (2024) and others analyzed the development model and path of rural industries by selecting a classic case from City Z in Province F, conducting field investigations, and summarizing the mechanisms for gradually achieving common prosperity through rural revitalization<sup>[2]</sup>. 3. Research on the Impact of Rural Industry Development: This research uses data analysis and quantitative assessment standards to study the overall impact of rural industry development through factual data. For example, Zhan Weipeng (2024) and others conducted a comprehensive assessment of rural industry development from the perspectives of agricultural industry, technology, and marketization using data and evaluation indicators<sup>[3]</sup>.

The development of rural characteristic industries differs from the traditional "exogenous" industrial development path, emphasizing localized characteristics. For example, Chen Yun and Zhu Yingying analyzed the impact of capital on rural characteristic industries from a capital operation perspective. Tuure Tuunanen (2024) and others discussed the improvement of economic income for rural elderly through integrated data analysis of rural characteristic industry development<sup>[4]</sup>.

### **2.2 Previous Approaches to Value Co-Creation in the Development of Rural Innovation Industry Ecosystems**

"Value co-creation" is a dynamic process in the development of rural innovation industry ecosystems, resulting from the integration of resources and industrial interactions. Domestic scholars like Xie Zhiqiang (2024) believe that "the research on value co-creation has extended from

purely economic studies of the relationship between enterprises and consumers to various professional fields, especially applying the theory to rural industry development, where it has achieved some research results. Essentially, value co-creation is a dynamic process of resource integration, resource utilization, industrial interaction, and service exchange" [5]. Scholar Yu Runzhe and others (2024) pointed out in their research that leading agricultural enterprises should leverage their advantages and dominant positions to actively promote the creation of value in the agricultural industry, sharing resources and value with relevant stakeholders to achieve sustainable agricultural development [6]. Additionally, scholars like Wang Jiahe (2024) used value co-creation theory to construct a process model of rural agricultural industry value co-creation, incorporating multi-dimensional market participants [7].

An analysis of domestic and international literature shows that the research and implementation of value co-creation theory have expanded beyond the narrow focus on enterprises and consumers, now encompassing various industries and fields. It involves the value propositions, creation, and harvesting among multiple stakeholders. Therefore, to facilitate the subsequent discussion and analysis in this article, the resources and value creation capabilities related to the development of rural characteristic industries are defined as follows: Firstly, from the perspective of resource classification, resources can be clearly defined as object resources, operational resources, and combinatorial resources (Tracey S. Danaher et al., 2024) [8]. Object resources include core elements such as raw materials, machinery and equipment, land resources, and stores; operational resources involve intangible assets such as brand value, technology, skills, and culture; combinatorial resources integrate operational and object resources, focusing on holistic design planning and operational implementation. Secondly, value co-creation capabilities can be divided into raw material acquisition capabilities, brand radiation capabilities, deep processing capabilities, and cross-sector resource allocation capabilities (Cecilia Avila Garzon et al., 2024) [9].

### **3. Co-Creation Examples and Intrinsic Challenges in the Development of the Rural Innovation Industry Ecosystem in Jilin Province**

#### **3.1 Typical Cases of Value Co-Creation in the Development of Rural Innovation Industry Ecosystems**

##### **3.1.1 Co-Creation Example of Rural Innovation Industry Ecosystem in Hailong City, Jilin Province: Helong City**

###### **(1) Agricultural Industry Leadership, Promoting Agricultural Industry Advancement**

Since the establishment of the ecosystem in Helong City, agriculture has been prioritized as the leading industry, actively promoting the rapid development of the Sanghuang (*Phellinus igniarius*) industry. Currently, Hailong City's Sanghuang cultivation accounts for 70% of the national production. This initiative has also spurred the development of processing industries for other products such as *Ganoderma lucidum* (Lingzhi) and ginseng, forming an industrial chain that enhances product value. Additionally, it has attracted capital investments into related enterprises, establishing a notable brand for Helong's local specialties.

###### **(2) Development of Red Tourism, Upgrading Innovative Industries**

Helong City, a historical revolutionary base, leverages the "Yaoshuidong" Red Revolutionary Education Base to develop a premium red tourism industry. This includes party education bases for government and party organizations, and study tour activities for schools. By fully utilizing the advantages of the revolutionary base, collective efforts have upgraded the red heritage. Moreover, the unique Korean ethnic customs and historical culture have been further explored, resulting in the innovative creation of a comprehensive tourism base that integrates "red base", "Korean ethnic

features", "historical footprints", and "Sanghuang town". This initiative exemplifies value co-creation in the development of an innovative industry ecosystem (Figure 1).



Figure 1: Red comprehensive tourism ecosystem

### 3.1.2 Case Study of Rural Innovation Industrial Ecosystem Co-creation in Jilin Province – Xinsheng Village, Baishan City

#### (1) Injecting New Momentum through Technology and Talent, Ensuring Top-level Design

In 2021, under the backdrop of the provincial government's efforts to accelerate the construction of the Changchun Metropolitan Area and promote the win-win development of various cities and regions, Xinsheng Village introduced the Baishan Branch of the Changchun Life and Health Industry Research Institute. The institute brought resources, technology, talent, and equipment to Xinsheng Village, promoting the modernization of agriculture. During the collaboration, the institute stationed university students in the village and invited agricultural experts from the Chinese Academy of Agricultural Sciences and China Agricultural University to provide guidance and planning. Through planning, it was determined that Xinsheng Village would pursue the path of "healthy agriculture and healthy food ingredients," creating a road to ecological agricultural development with the concept of "lucid waters and lush mountains are invaluable assets."

#### (2) The Success of "Ecological Food Ingredients" Products Promotes the Realization of the Local Ecological Value

After the introduction of the Changchun Life and Health Industry Research Institute, the institute hired a professional team to develop an action plan to enhance the quality of agricultural products across Baishan City. Building on existing agricultural product brands, they continued to improve brand cultivation plans, focusing on training nationally influential agricultural product brands and driving the overall economic development of Baishan City through product branding. With the concerted efforts of various sectors of society, five agricultural products grown in Xinsheng Village—"cherry tomatoes, Arus cantaloupe, ground cherry tomatoes, sweet corn, and honeydew melons"—were awarded the "ecological food ingredients" brand.

## 3.2 Real-world Constraints in the Development of Rural Innovation Industrial Ecosystems

### 3.2.1 On-site Visits, Data Collection, and Analysis

The author selected two leading agricultural enterprises in Jilin Province as representative cases and conducted preliminary research to understand their basic situations. The key areas of focus and interview content for the site visits were determined in advance. Subsequently, from January to May 2024, the author conducted multiple rounds of research, interviews, and data collation with these two enterprises. The research focused on understanding the upstream and downstream industries of the enterprises and the value co-creation with relevant stakeholders, as well as the operational

model of the ecosystem. Detailed information can be found in Table 1.

Table 1: Interview and investigation of leading agricultural enterprises in Jilin Province

Case Enterprise	Location	ID	Position	Interview Content	Number of Interviews	Duration
Zhulaoliu Food Co., Ltd.	Changchun City	A1	Manager	Plantation base, stakeholder relationships, industrial ecology, operation of the agricultural industrial ecosystem, real-world issues	2	2 hours
		A2	R&D Director	Research collaboration, production and processing cooperation, new product development	1	1 hour
		A3	Agricultural Development Director	Plantation cooperation, product cooperation, agricultural technical support, product sales	1	1 hour
Dexiang Group	Dehui City, Changchun	B1	Manager	Ecological agriculture development, stakeholder relationships, cooperation methods, benefit distribution mechanisms, industrial chain operation, real-world issues	1	1 hour
		B2	Head of Agriculture Department	Breeding cooperation, sales cooperation, plantation and breeding technical guidance, real-world issues	1	1 hour
		B3	Logistics Manager	Cold chain transportation mechanisms, transportation cooperation methods, market reach, industrial scale	1	30 minutes

### 3.2.2 Real-world Constraints in the Development of Rural Innovation Industrial Ecosystems

#### (1) Unreasonable Industrial Planning and Construction

Many rural areas fail to base their overall industrial planning on their actual conditions, characteristics, and market analysis. They blindly introduce various projects that ultimately fail to adapt to local conditions, becoming burdensome. Such projects not only fail to increase local incomes but also negatively impact community cohesion and enthusiasm. Additionally, some villages face significant issues with equity distribution in industrial projects. Typically, the village collective holds more than half of the shares, resulting in low participation from enterprises and villagers while the village collective bears excessive risks.

#### (2) Insufficient Industrial Integration and Limited Income Growth for Small Farmers

Rural industries are primarily based on agriculture and aim to achieve the rational use and distribution of rural resources, technology, personnel, and funds through innovation, industrial clustering, and industrial cooperation to promote the integration of various industries. However, the current development of various industries is uncoordinated, their integration is insufficient, and the distribution of resources and technology is uneven. The internal structure of agricultural development is imbalanced, and the income growth for farmers is unsatisfactory. Agricultural development is affected by natural conditions, production technology, the overall quality of personnel, and the integration of the industrial chain, resulting in insufficient capacity for

converting agricultural products and limiting income growth for farmers.

### (3) Lagging Industrial System Development and Insufficient Technological Support

Most rural industries still rely on traditional sectors, leading to a low contribution rate of industrial technology, fragmented industries, and insufficient talent supply. Firstly, the low investment in agricultural technology results in negligible agricultural progress and low production efficiency, preventing income growth for farmers. Secondly, the conversion rate of agricultural technological achievements is low. The promotion and application of agricultural technological innovations are hindered by objective conditions, resulting in insufficient conversion of technological outcomes.

### (4) Loose Market Relationships for Farmers and Weak Market Integration

Current rural industrial development lacks overall coordination, leading to loose relationships between industries. Small farmers, in particular, are at a significant disadvantage in market competition. Due to the lack of overall industrial coordination and industrial leaders, small farmers sell their agricultural products independently. Limited funds and market information access often result in poor returns on their agricultural products.

## 4. Value Co-creation Empowering New Models of Rural Innovation Industrial Ecosystems

### 4.1 Mutual Empowerment of Rural Industrial Structure and Innovation Industrial Ecosystem

Firstly, the construction of the rural industrial ecosystem and the rural innovation industry can achieve a new model of the rural innovation industrial ecosystem through value sharing and transmission [10]. On one hand, the sustainable development of rural innovation industries relies on the orderly integration of industrial resources and the reasonable adaptation of the industrial chain. From the perspective of the industrial ecosystem, this ensures the effective supply of resources for the development of innovation industries. On the other hand, the industrial ecosystem provides support and protection benefits for individual innovation industries, promoting the effective distribution and application of industrial resources through the construction of the industrial ecosystem. This also contributes to the harmonious coexistence of rural economic development and the industrial ecosystem (Figure 2).



Figure 2: A new model of rural innovative industrial ecosystem

Secondly, higher quality products and services provide sustainable development momentum for rural innovative industries. From an economic perspective, the innovative industry ecosystem integrates rural innovative industries into ecological construction, enhancing the economic and cultural value of product outputs, thereby promoting economic development in rural areas. During this process, the main entities within the innovative industry ecosystem provide shared information on production, management, and markets to relevant industry stakeholders. By consolidating the development efforts of rural innovative industries, the innovative industry ecosystem improves the efficient utilization of industrial resources, reduces resource consumption, and lowers product costs

[11]. This, in turn, achieves product "quality improvement and cost reduction," enhancing the economic development quality and benefits of rural industries.

## 4.2 Collaborative Construction of a Value Co-creation Model in the Rural Innovative Industry Ecosystem

### 4.2.1 Five strategies for rural industrial development planning: goals + positioning + principles + design + planning

In recent years, the government has introduced a series of policies to support rural industry development. Notably, the formal release of the No. 1 Central Document in 2024 has once again brought the core issue of "agriculture, rural areas, and farmers" into national focus. The *Opinions of the Central Committee of the Communist Party of China and the State Council on Learning from the Experience of the "Thousand Villages Demonstration and Ten Thousand Villages Renovation" Project to Effectively Promote the Comprehensive Revitalization of Rural Areas* document has drawn a clear "roadmap" for the comprehensive revitalization of rural areas.

Under the support of policy, rural industries need to achieve significant progress through reasonable planning. There must be clear development goals and positioning (Figure 3). The six typical development directions for rural projects are: industry-driven, ecological agriculture, high-efficiency agriculture, leisure farming and animal husbandry, suburban villages, and cultural tourism.

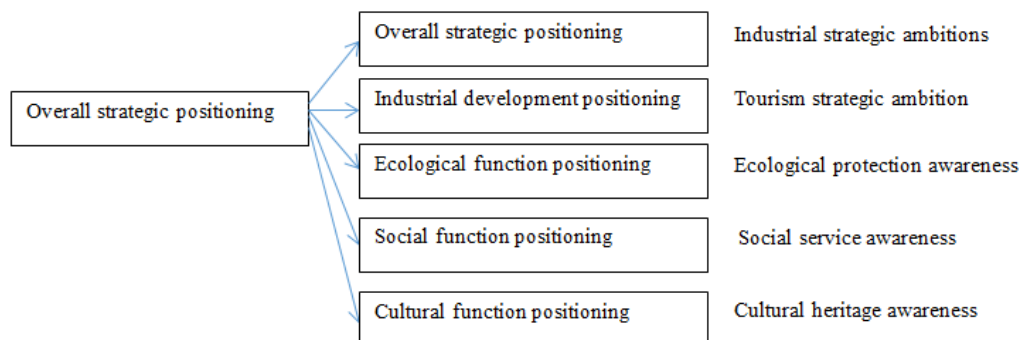


Figure 3: Rural industry positioning

In the subsequent stages, an overall design and strategic plan for rural industrial development need to be formulated, based on the principles of rural industry development. General rural development should adhere to principles such as protecting the rural landscape, preserving the authenticity of local culture, retaining productivity, and attracting population. On this basis, regional industrial planning should be coordinated, integrating various industries and developing a comprehensive plan. The most suitable industrial projects should be selected and expanded, developing these projects into key supports for rural development. Building on the existing foundation, additional industries should be developed, and the industrial structure should be adjusted to promote the healthy development of rural industries.

### 4.2.2 Integration and Mutual Benefits in Rural Industries to Promote Income Growth for Industry Participants

For the rural innovative industrial ecosystem, the ultimate realization of its "value co-creation" benefits requires continuous efforts by rural innovative industry participants to seek and strengthen collaborations along the industrial chain. This collaboration drives the joint development of other

innovative industry participants, ultimately manifesting in diversified development models such as "farmers + cooperatives/leading enterprises" and "farmers + cooperatives + leading enterprises," primarily demonstrating a convergence from upstream to downstream. Leading enterprises, as the dominant operational entities, integrate into the development of rural innovative industries, supporting the extension of the industrial chain, stabilizing product output quality, and attracting other rural industry participants to join. This integration ultimately forms a related industry development ecosystem, such as the "leading enterprises + cooperatives + farmers" model (Figure 4).

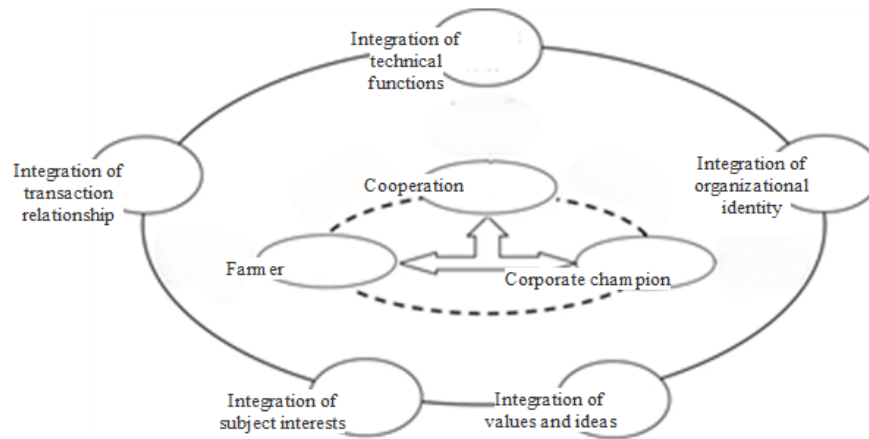


Figure 4: Mutually beneficial symbiotic relationship of rural industries

#### 4.2.3 Technological-Driven Construction of Rural Innovative Industrial Systems

Focusing on the development advantages of rural innovative industries in Jilin Province, rural innovative industry resources, culture, and products are integrated. First, cultural elements such as material, behavior, and spirit within rural innovative industries are surveyed. Through the integration and refinement of cultural resources, the spatial facilities of rural innovative industries are optimized [12]. For instance, in the innovative cultural and tourism industry, rural special ice and snow performances, such as "sledding, ice tops, and ice slides," are showcased to the outside world in the form of "modern stage + folk performances." By innovating the commercial representation space of rural culture, the ethnic culture of Jilin Province is displayed while recreating rural innovative industrial resources. Second, the integration of technology in the rural innovative cultural and tourism industry is strengthened, and cultural and tourism consumption innovation is deepened. Smart tourism, interaction, feedback, and travel experiences are achieved online and offline through cloud tourism and cloud exhibitions. Additionally, the customization, personalization, and quality of consumer services are realized through providing all-season, all-sample, and all-age experience projects.

#### 4.2.4 Market-Oriented Promotion of Rural Industrial Revitalization

First, the local characteristics of cultural and tourism projects are identified, and the traditional mindset is shifted to design unique "intellectual property (IP)." By operating the IP, a "bottom-up" and "small topics becoming big issues" development model is realized. On this basis, according to market development, the content and structure of the cultural and tourism industry are continuously enriched, gradually upgrading to comprehensive rural cultural and tourism projects. IP content must fully integrate the natural resources, historical culture, and traditional culture of the rural area (e.g., folk performances, distinctive handicrafts, rural customs).



Second, the development of rural agricultural innovative industries is promoted, focusing on "expanding farmers' market awareness and driving rural industrial innovation." The rural "basic" economy should be strengthened. Relevant government departments should monitor the market and provide timely market information to farmers, guiding them to enhance their market and innovation awareness and comprehensively promote the branding and quality improvement of agricultural products. On one hand, farmers' awareness of quality competition should be enhanced. The government can stimulate direct exchanges between farmers and distribution entities through regular agricultural product trade fairs, helping farmers understand current market demands. On the other hand, brand marketing awareness should be cultivated. Farmers should establish a link mechanism between related organizations and farmers' interests through village collectives, cooperatives, and related enterprises, fostering farmers' brand marketing awareness and expanding agricultural product sales channels to increase economic income.

## 5. Conclusions

The construction of a rural innovative industrial ecosystem needs to be based on value co-creation, integrating the industrial chain participants and expanding value co-creation pathways. By following the logical framework of "planning, integration, driving, and revitalization," the capabilities for cross-industry collaboration, diversified development, and brand building among funds, industries, projects, and participants within the ecosystem are enhanced. This approach aims to construct an ecosystem led by leading enterprises in Jilin Province, amplifying the benefits to farmers and providing a general development reference path for rural revitalization and industrial value co-creation.

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