Agricultural & Forestry Economics and Management (2025)
Clausius Scientific Press, Canada

DOI: 10.23977/agrfem.2025.080106
ISSN 2616-2202 Vol. 8 Num. 1

Construction Logic and Implementation Strategy of Rural Industrial Ecosystem from the Perspective of Value Co-creation

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Keywords: Value Co-creation, Rural Industrial Ecosystem, Sustainable Development

Abstract: In the process of deepening the rural revitalization strategy, the quality of coordinated development of rural industries has become one of the key factors to determine the future level of rural economic development. Based on the perspective of value co-creation, this study deeply discusses the construction logic and implementation strategy of rural industrial ecosystem. Through field visits and investigations, we have collected a large number of practical demands on the construction of industrial ecosystems, and found that rural industries are facing multiple challenges such as resource integration, technological innovation, and market expansion in the process of integration. Based on this, this study puts forward the implementation path of value co-creation under the industrial integration ecology, emphasizing the multi-party collaborative mechanism of government guidance, enterprise leadership and farmer participation to promote the extension and upgrading of rural industrial chain. Specifically, this study suggests that the high-quality development of rural industries should be achieved through the construction of resource-sharing platforms, the promotion of technological innovation alliances, and the cultivation of new agricultural operators. Finally, this study aims to provide theoretical basis and practical guidance with practical reference value for the construction of rural industrial ecosystem, and help the comprehensive implementation of rural revitalization strategy.

1. Introduction

In 2021, the Implementation Plan for Accelerating the Construction of a New Pattern of Industrial Development in Jilin clearly states that "new producer services and life services in rural areas should be cultivated." Under the background of comprehensively promoting the strategy of rural revitalization, the sustainable development of rural industry in Jilin Province is facing multiple challenges such as single industrial structure, extensive utilization of resources and unbalanced distribution of benefits, and the traditional single linear development model is difficult to meet the needs of complex and diversified modern industrial system. Based on this, this study takes the value

co-creation theory as the core analytical framework, and interprets the endogenous development logic and realization path of the rural industrial ecosystem by constructing a three-in-one strategy system of "subject collaboration - technology embedding - ecological empowerment", providing a new theoretical perspective and practice paradigm for solving the proposition of sustainable development of rural industries.

Since the policy orientation of rural industrial integration was first proposed in 2015, important deployments have been made for nine consecutive years around "encouraging various regions to expand multiple functions of agriculture", "focusing on the development of agricultural product processing, rural leisure tourism, rural e-commerce and other industries", "implementing the rural leisure tourism promotion plan", and "implementing the policy of guaranteeing and regulating the land use for the integrated development of rural one, two and three industries". But the traditional rural industry development mode is often limited to a single industry, isolated management, it is difficult to form a systematic competitiveness and sustainable development ability. In this context, this study focuses on the construction of rural industrial ecosphere in Jilin Province from the perspective of value co-creation, and analyzes the sustainable path of rural industrial ecosphere construction from a multi-dimensional perspective. This not only helps to improve the overall benefits of rural industries, but also provides strong support for the overall revitalization of rural society. In this context, it is of great practical significance to study the construction logic and implementation strategy of rural industrial ecosystem from the perspective of value co-creation.

2. Application of Value Co-creation Theory in Rural Industry

Value co-creation was first proposed by Prahalad and Ramaswamy in 2004, and then explored by scholars from different perspectives, including management perspective, market perspective, consumer experience, "service-oriented logic", design logic, innovation and new product development perspective, etc. In recent years, scholars have been actively exploring the application of value co-creation theory in rural industries. For example, Ma Yong et al. (2021), focusing on the value co-creation of rural red tourism industry, proposed that the value co-creation theory gradually expanded from the duality of "enterprise-consumer" to a network system of multi-subject collaboration, with its core emphasizing that producers and consumers become value promotionists together. Achieve balanced win-win results through dialogue, resource sharing, and transparency (DART model) [1]. Ma Shaohua (2024) takes the participation of Wen's shares in rural revitalization as an example, follows the logic of "value proposition - value creation - value sharing", builds the model of "company + farmer" and "modern agricultural industrial park", and drives multi-party win-win by technology sharing, employee stock ownership and other systems [2]. In the final analysis, the co-creation of rural industrial value is a dynamic process of multi-subject cooperation, which needs to ensure the balance of interests by institutionalization, enhance efficiency by technology, and build development consensus by cultural identity [3]. This mode of multi-subject collaborative value creation provides a theoretical basis for the construction of rural industrial ecosystem.

3. The Logic of the Construction of Rural Industrial Ecosystem

3.1. The Logic of Industrial Integration as a Link

In the field visits to some villages in Jilin Province, a number of grassroots cadres and farmers gave feedback on the deep dilemma of industrial integration. In Luguo Village, Helong City, for example, the local goose farmers mentioned that "our village put out nearly 10,000 geese a year, but after slaughter, the down is directly sold at a low price, the village has no deep processing plant, and

high-profit down jackets and foie gras products have been earned by foreign enterprises." This phenomenon is also prominent in Shulan City Sanliang Village, village Secretary Wang said frankly: "Intangible cultural heritage game 'thousands' was originally a characteristic cultural IP, but the lack of professional team development, tourists can only eat farmer's rice, take photos, per capita consumption of less than 100 yuan." This problem of insufficient development of the industrial chain still exists in other parts of Jilin. The main reason of this problem is not only the lack of regional industrial development consciousness, but also the insufficient conversion rate of agricultural products processing. The development of cultural resources is still superficial, and the rural brand IP resources lack effective design and development. Therefore, the development of rural industry should follow the industrial coupling logic, optimize the allocation of resources in the rural industrial ecosystem, and form an interdependent and mutually promoting organic whole.

3.2. Logic Driven by Digital Enablement

During a field visit to Gaolong Village, Monkey Stone Town, Xiaoyuan City, the village secretary said that the e-commerce logistics base built in the village last year did open up the logistics channel, but the digitalization in the field is still lame. For example, when spring ploughing, we want to use the soil moisture monitoring system to deploy irrigation, but the whole town has three sets of equipment to use, and intelligent agricultural machinery is a rarity." After the field exploration of the greenhouse area, the technician said: "Indeed on some iot agricultural equipment, but the equipment has been purchased for a year, because it will not debug the network, and now the data is still locked in the local server." This "equipment sleeping" phenomenon in the town of Heishui city also exists, watermelon cooperative head Wang Jinkui holding a mobile phone said: "live with goods looking lively, but we will not even background data analysis, packaging or sacks plus trademark stickers." After the neighboring county uses the blockchain traceability system, the watermelon of the same quality will be sold for 80 cents more per kilogram." After the visit, it was found that although the current digital transformation of agriculture has been promoted, the coverage rate and utilization rate of smart agricultural equipment still have room to improve, the fundamental reason is that the smart agricultural hardware investment is insufficient, the structural shortage of e-commerce talent, and the cross-level data integration technical standards are not unified, forming the dilemma of "there is no application of equipment, there is no data connection".

3.3. Green Sustainable Development-Oriented Logic

Farmers in Lishu County Sankeshu Village said in the survey, "Our village has implemented the 'pear tree model' for five or six years, but my family still insists on ploughing - straw mulch to buy special agricultural machinery, subsidies are only enough to rent machine money, the cost of farming is high, who is willing to take risks." And 200 kilometers away in Helong City Sanghuang Industrial Park technical director said: "Annual production of 12,000 tons of bacterial residue, enterprise self-built processing line cost more than 10 million, because of lack of funds, now can only be sold to the surrounding chicken farms as bedding, the actual utilization rate is less than 20%." The research found that the essence of this kind of ecological contradiction is the lack of closed-loop policy, and the deep contradiction lies in the high cost of ecological protection technology promotion and the fracture of the industrial chain of agricultural waste recycling. Therefore, it is necessary to further adhere to the logic of green sustainable development, strengthen the coordinated development of the rural industrial ecosystem in the three dimensions of economy, society and environment, and achieve the balance between contemporary development and the needs of future generations.

4. The Implementation Strategy of the Construction of Rural Industrial Ecosystem

4.1. Strengthen the Mechanism for Coordination and Cooperation among Multiple Entities

Rural revitalization needs to build a collaborative network of government, enterprises, farmers and social organizations, and form a three-way governance system embedded in "state-market-community". First, the role evolution from government-led to enterprise-led, and finally form a dynamic process of collaborative participation of multiple stakeholders; The second is to stimulate the villagers' subjective consciousness through emotional mobilization, and establish the action framework of cooperation, participation and resource integration; Third, cultural identity mechanism as a link to promote the organic integration of local resources and external capital. This kind of coordination mechanism breaks through the traditional external development model and realizes the effective connection between internal power and external resources [4].

In particular, enterprises, as market players, should give full play to their advantages in capital, technology and management, actively participate in the investment and operation of rural industrial projects, and drive farmers to increase their income and get rich by establishing a close interest linkage mechanism with farmers. For example, some leading agricultural enterprises sign order contracts with farmers to purchase farmers' agricultural products at protective prices to ensure stable earnings of farmers. Farmers should actively participate in industrial development, improve their skills and quality, achieve collective development through cooperatives and other forms, and enhance market bargaining power.

4.2. Strengthen the Construction of Digital Infrastructure and Personnel Training

In the construction of rural industrial ecosystem in Jilin Province, it is necessary to take value co-creation as the guidance, and jointly promote the construction of digital infrastructure and talent co-education. On the one hand, through the linkage of government and enterprises, a whole-domain digital base covering five levels of "province, city, county and village" is built to accelerate the extension of optical fiber network to remote areas. The government and enterprises will deepen the layout of 5G networks and computing power clusters, relying on provincial agricultural and rural resource data centers. The government and enterprises integrate multidimensional data resources such as production, circulation, and environment to build a "Jinnong Cloud" platform system that supports intelligent decision-making. On the other hand, the establishment of government-led, supported by universities, enterprises to participate in the digital talent cultivation mechanism, through the integration of production and education customized intelligent agricultural machinery operation, agricultural big data analysis and other course systems, synchronously improve the talent introduction policy to attract digital technology experts to participate in rural industrial planning, the formation of local "digital new farmers" and external professional team collaborative innovation ecological pattern. Through the inclusive coverage of infrastructure and the continuous cultivation of talent chain [5], the value aggregation of data elements, technical resources and human capital is realized, and the internal impetus is injected into the digital transformation of the whole chain of rural industries.

4.3. Promote Innovation in the Concept and Practice of Green Development

In the construction of rural industrial ecosystem in Jilin Province, it is necessary to take value co-creation as the core orientation and deeply integrate the concept of green development into the practice and innovation of the whole chain. On the one hand, we should strengthen the top-level design and coordination mechanism, promote the government, enterprises, scientific research

institutions and farmers to form a green development community through policy guidance, scientific and technological empowerment and interest linkage, and build a green, low-carbon and circular agricultural industry system. On the other hand, it focuses on the value transformation of ecological products, innovates the path of ecological industrialization by relying on the advantages of resource endowment, and realizes the systematic transformation of ecological resources into economic value by improving the ecological compensation mechanism, perfecting the green standard certification system, expanding carbon sink trading and other market-oriented means [6]. At the same time, deepen the integration of the three industries, based on the research and application of green technology, supported by digitalization and intelligent upgrading, promote the green transformation of the whole process of agricultural production, processing and circulation, create a green brand matrix with regional recognition, and form a sustainable development pattern of mutual promotion and symbiosis of ecological benefits and economic benefits.

5. Conclusion

Based on the perspective of value co-creation, this study systematically discusses the internal logic and practical path of the construction of rural industrial ecosystem, and reveals the key role of multi-subject collaboration and co-governance in the reconstruction of rural industrial value chain. Through the integration of the three dimensions of industrial integration, digital empowerment and green sustainable development, a systematic ecosystem construction paradigm is proposed, and value creation is innovatively transformed from a single subject isolated practice to a cross-domain and cross-level dynamic collaboration network. This study further promotes the transformation of agricultural production mode to ecological and intelligent, and provides an effective solution to solve the problems such as the fragmentation of rural industrial elements and the imbalance of value distribution, which has realistic decision-making reference value.

Acknowledgement

Project Title: New Operation Model for Rural Innovation Industry Ecosystem Based on Value Co-Creation Theory

Project Source: Jilin Provincial Science and Technology Development Plan Project, 2022

Project No.: 20230601113FG

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