Understanding the Integrated Industrial Development in Rural Districts: A Qualitative Insight in China[1]

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Abstract

The integrated development of rural industries is an important starting point for deepening agricultural supply-side structural reform and promoting revitalizing rural industries. It is also an effective way to promote the sustained increase of farmers' income and win the overall construction of a moderately prosperous society. The integrated development of rural industries is a hot topic in rural economics, development economics, and other related disciplines. From the theoretical and empirical aspects, the existing research is summarized, and the following issues are discussed: the definition of rural industrial integration development, the measurement of development level, the research of integration mechanism, the integration development effect, the development path, promotion mechanism, and future development direction. In the future, we should focus on improving the evaluation dimension of rural industrial integration, enrich quantitative measurement research, empirically analyze its influencing factors, and test its economic or environmental effects.

Keywords: Rural Industrial Integration; Fusion Mechanism; Fusion Level; Development Effect; Fusion Path

Introduction

The report of the 20th National Congress of the Communist Party of China (CPC) was put forward for the first time: "Build a new system of high-quality and efficient service industry, and promote the deep integration of modern agriculture and modern service industry." Before this, the central government documents repeatedly stressed the need to establish a new agricultural social service system (Fu & Akter, 2016). In 2007, the State Council, on accelerating the development of the service industry, endorsed several opinions, such as "the active development of rural service industry. Focusing on the pre-production (Allport et al., 2022), production, and post-production services of agricultural production, accelerate the construction and improvement of the rural socialized service system with production and sales services, scientific and technological services, information services, and financial services as the main body (Zuijderduijn, 2010), improve the rural infrastructure, accelerate the development of the rural life service industry, and improve the quality of life of farmers." Document No. 1 of the Central Government in 2015 proposed to "strengthen agricultural socialized services and promote the integrated development of rural primary, secondary and tertiary industries." In September 2017, the Ministry of Agriculture, the National Development and Reform Commission, and the Ministry of Finance jointly issued the Guiding Opinions on Accelerating the Development of Agricultural Productive Services, proposing that we should take the service of agriculture and farmers as the fundamental (Verma et al., 2022), and promote the structural reform of the agricultural supply side as the main line, and vigorously develop diversified multilevel and multi-typed agricultural productive services, drive more farmers into the orbit of modern agricultural development, and comprehensively promote the construction of modern agriculture.

Rural industrial integration development, on the one hand, can expand the field and scope of the modern service industry involved (Mariann & Gábor, 2023), comprehensively build a modern industrial system, and use the concept of modern service industry to lead and promote the transformation of the mode of agricultural development, reduce the production cost of agricultural products, expand the channels of farmers' income, alleviate the constraints on agricultural development by the resources and environment, and promote China's agricultural development towards the road of modernization; at the same time, the mutual advancement of industries promote each other. At the same time, the mutual progress and mutual promotion of industries will promote economic prosperity (Liu et al., 2023), fruit sharing, and social stability, and ultimately achieve the goal of "making the fruits of development benefit all the people more and more equitably, and steadily advancing towards common prosperity" put forward by General Secretary Xi Jinping. Therefore, it is important to Therefore, it is important to sort out the relevant literature on the connotation, characteristics, level measurement, development effects, and influencing factors of the integrated development of rural industries both at home and abroad and explore the effective paths and promotion mechanisms to promote the integrated development of rural industries, in order to solve the problem of the practice of "revitalization of rural industries," effectively improve the comprehensive utilization rate of rural resources, expand the boundaries of the diversified functions of agriculture and its benefits, broaden the channels of employment and income generation for farmers, and promote the development of the rural industry. It is of great significance to break through the practice of "rural industrial revitalization," effectively improve the comprehensive utilization rate of rural resources, expand the boundaries of diversified agricultural functions and income, broaden the channels of farmers' employment and income increase, and promote the integrated development of urban and rural areas.

Literature Review of Rural Industrial Integration

At present, academics have conducted a large number of studies on rural industrial integration, mainly on its connotation and characteristics, the mechanism of industrial integration development, the measurement of industrial integration level, the effect of industrial integration development, and the path of industrial integration development.

1. Connotation and Characteristics of Rural Industrial Integration

The idea of industrial integration first originated from American scholar Rosenberg's research on the evolution of the American machine tool industry. Subsequently, many scholars have researched the definition, motivation, and integration mode of industrial integration. Guo (2010) believes that industrial integration refers to the dynamic development process in which different industries or industrial sectors within the same industry interpenetrate and cross each other, eventually forming a new industry. At the same time, Lee (2022) believes that technological progress, deregulation, mergers, and competitive pressures are the driving forces that promote industrial integration. According to different classification methods, industrial integration can be divided into different types according to the nature of the industry or product can be divided into alternative integration and complementary integration; the integration process can be divided into functional integration and institutional integration according to the degree of novelty of the integration technology can be divided into the application of the integration, horizontal integration, and potential integration.

The concept of rural industrial integration originally originated from Japanese scholar Imamura Nara-shen's concept of sixfold industrialization of agricultural development. The "sixth industry" can be understood as the product of the primary, secondary, and tertiary industries, which emphasizes that agriculture should be actively integrated with the industrial and service sectors to promote the expansion of the scope of the industry and the extension of the industrial chain. One of the earliest scholars in China to conduct a systematic study on the integration of rural industries found that the integration of primary, secondary, and tertiary industries began to appear in the development of agricultural industrialization. The so-called agricultural industrial integration is defined by academics from two aspects: Lai et al. (2023) believe that agricultural industrial integration is the separation of some elements from agriculture to create a new form of value body, and Wang and Zhou (2021) and Wang et al. (2014) believe that agricultural industrial integration occurs in the closely linked industries or between different industries within the same agricultural industry, driving the integration of resources, elements, technology, market demand in the rural areas, and the integration of technology and market demand in the rural areas, technology, market demand in the rural integration and optimization and restructuring, the formation of the integration process as a whole.

2. Analysis of the Mechanism of Rural Industrial Integration Development

According to the theory of division of labor, division of labor can comprehensively improve labor productivity. Gur (2015) mentioned in The Wealth of Nations that the division of labor can improve the workers' skills in each segment, reduce the various consumptions they incur when switching between different types of work, and thus improve labor efficiency. Economists such as Aspromourgos (2010), Hearn (2018), and Michael (2007) further developed and confirmed Smith's theory of division of labor. The problem of integrated development of rural industries was studied based on the social division of labor. Scholars such as Wang et al. (2024), Oberholster et al. (2015), Wang and Cai (2022), and (Sánchez-Galván et al., 2019) consider the deepening of the division of labor in the agricultural production chain,

the increase in the degree of industrial specialization and the saving of production costs as the factors leading to services to the extension of the service industry to agriculture.

It can be seen from Wang and Tian (2023) and Gu and Chen (2020) that, with the development of the national economy, factors of production such as labor, capital, and other factors of production flow between primary, secondary, and tertiary industries. In the early stage of economic development, the primary industry of a country or region occupies a dominant position, and the factors of production are also concentrated in the primary industry; during the period of rapid economic development, the factors of production begin to transfer between industries, especially the factors of production, such as labor and capital, flow rapidly from the primary industry into the secondary and tertiary industries, and the concentration of advanced factors of production in the tertiary industry further promotes the development of the service industry; with the further development of the economy, especially in the late stage of industrialization, the service sector has become more important and the development of the service industry has become more important. Especially in the late stage of industrialization, the service industry is highly developed. Inter-industry co-ordinated development and innovative development become particularly important. Hence, the tertiary industry is more closely linked with the primary and secondary industries. This process strengthens the link between the service industry and agriculture and lays the foundation for the integration and development of the agriculture and service industries.

According to the modern theory of industrial integration (Peng & Wang, 2022), the generation of digital technology has led mankind into the information age. The development trend of integration between industries has appeared. The integration of industries has prolonged the length of the industrial chain of traditional industries on the one hand and spawned several new industrial forms on the other. The result of the integration of agriculture and service industry is that, with the penetration of advanced technologies, concepts, and contents of the service industry into agriculture, the modernization of agricultural production mode has occurred, the added value of agriculture has been rapidly increased, and the agricultural industry chain has been continuously improved and extended; at the same time, due to the increase in the demand of agriculture to the service industry, the content of the service industry has been continuously expanded to agriculture. Digital information agriculture, eco-agriculture, and tourism agriculture have emerged as new cross-industry business forms. Digital information agriculture, eco-agriculture, tourism agriculture. Some new cross-industry business forms have emerged, horizontally broadening the services' areas and contents.

3. Measurement and analysis of the level of rural industrial integration

Research on rural industrial integration is at an early stage, lacking uniform measurement and evaluation standards and quantitative measurement research. The current measurement methods for agricultural industry integration mainly include the entropy value method, grey correlation method, output value contribution method, attribution matrix analysis, coupling coordination degree model, linear weighting method, hierarchical analysis method, and so on.

Huang et al. (2013) and Ren and Zhu (2010) used the entropy value method and grey correlation method to quantitatively analyze the development status of agricultural industry integration in Shanghai and Zhengzhou, respectively. Alabi et al. (2022) combined the output value contribution method with principal component analysis to measure the integration of the agriculture and service industry in Sichuan. Li et al. (2023) analyzed the state of industrial integration between the agriculture and service industry on the demand side by constructing

the attribution matrix, extracting the relevant non-diagonal elements in the matrix, and calculating the difference of the complete demand coefficient of agriculture to service industry to analyze the state of industrial integration between the two on the supply side. Hu and Xu (2020) measured and analyzed the level of integration of the three industries in China's rural areas through the coupled coordination degree model based on theoretical analysis. Qi et al. (2016) measured the level of integration and development of the agriculture and science and technology service industry through the linear weighting method from the aspects of integration behavior and effect. Liu et al. (2021) used the hierarchical analysis method and the comprehensive index method to construct an agricultural industry integration evaluation index system containing three levels to assess the process and effectiveness of rural industry integration in Beijing. Su and Jiang (2022) established a comprehensive evaluation index system for the development of rural industrial integration in Hunan province. They used the hierarchical analysis method to calculate the degree of rural industrial integration in Hunan province. The results of existing analyses on the measurement of the level of integration of rural industries show that the degree of integration of rural industries in China is not high. It is slow to improve and shows obvious regional differences, with the level of integration in the eastern region obviously due to the central and western regions. The gap between the eastern and western regions is still gradually expanding.

4. Rural industrial integration development effect

The integrated development of rural industries is not only conducive to the improvement of farmers' income but also can play a key role in narrowing the urban-rural gap. Many scholars have explored the economic effects of the integrated development of rural industries from these two aspects. Scholars generally believe that industrial integration has a positive impact on the income of farm households, and in terms of its mechanism of action, (Wei et al., 2023), based on theoretical analyses, empirically found that the integration of rural industries can achieve the increase in the income of farm households through the promotion of the growth of family business income and wage income. Combining theoretical analysis and case study analysis, Bojnec and Ferto (2019) found that rural industrial integration can affect farm households' income through various modes. Industrial integration enhances the rationalization level and advanced level of the rural industrial structure, promotes the upgrading of the rural industrial structure, and then increases the income of farm households. Lantz (2005) and Sathre and Gustavsson (2009) point out that rural industrial integration is carried out in rural areas, which increases the added value of industries, creates more employment opportunities, and raises the income level in rural areas. In addition, Miller and Liu (2006) used the PVAR model and found that the growth of farmers' income inversely promoted the integration of primary, secondary, and tertiary industries.

In terms of narrowing the urban-rural gap, Gao and Li (2023) found that the integrated development of rural industries can not only directly narrow the urban-rural gap but also indirectly narrow the urban-rural income gap by promoting rural economic growth and accelerating urbanization. Wang (2023) found that the agricultural production service industry can directly reduce the urban-rural income gap by reducing costs and improving efficiency and achieve the same effect indirectly through industrial restructuring and urbanization.

Rural industrial integration has economic effects on social development and can bring environmental effects. Chen et al. (2023) found that rural industrial integration reduces the intensity of chemical fertilizer application, pesticide, and agricultural film used in agricultural production, which is conducive to promoting the green development of agriculture and the achievement of the "dual-carbon" goal, and the mechanism of its action is to indirectly

influence different polluting agricultural production behaviors through the promotion of large-scale agricultural management, the enhancement of rural human capital and the promotion of agricultural technological progress. Its mechanism indirectly influences different polluting agricultural production behaviors by promoting agricultural scale management, enhancing rural human capital, and promoting agricultural technology progress.

5. Research on the integration path of rural industries

Based on the micro level of each industry, scholars Liu and Zhang (2023), Hu (2023), and Graedel (2003) analyze the role of modern service industries such as information services, scientific and technological services, financial services, transport services, training services, wholesale and retail services, in the development of modern agriculture such as precision agriculture, eco-agriculture, green agriculture, leisure agriculture, etc., and put forward the supply model and realization paths of various types of modern service industries. Supply mode and realization path. Regarding playing the role of the main body, Zhou et al. (2023) pointed out that the promotion of industrial integration should rely more on the market and the power of enterprises. At the same time, it is necessary to strengthen the effective combination of the government and the market. Phiri et al. (2019) propose that farmers, agriculture, and rural areas should be the focus of the "trinity" operation to smoothly substitute modern scientific and technological achievements into the three main bodies of agricultural modernization construction so that the rapid innovation and upgrading of the agricultural industry can be technologically based support. At the macro level, first of all, we should pay attention to the co-ordinated development of the agriculture and service industry in various regions. Fu et al. (2020) believe that improving the integration and development level of modern agriculture and the service industry should be combined with the characteristics and advantages of the region, breakthroughs in key areas, and the role of the service industry in the whole process of agricultural production. Secondly, it is necessary to improve the institutional mechanism for the integrated development of the agriculture and service industry; Elman (2004), Hong (2008) and other scholars pointed out that strengthening scientific and technological innovation, market trafficability, information technology construction, the relevant legal operation system and mechanism, and scientific and technological service innovation to improve and improve, will effectively promote the integration of the development of the agriculture and service industry, and provide a good external environment for the integration of the development of rural industries. Finally, the construction of innovative agricultural industry integration mode. Vuletic et al. (2020) put forward the path of gathering modern service industry elements in traditional agriculture and constructed a new model of coupling the development of the service industry and agriculture. Kefeli et al. (2023) proposed accelerating the two industries' deep integration from model and system innovation.

Conclusion and further research direction

China's rural industrial integration development connotation, characteristics, modes, problems and countermeasures, and other research have a certain theoretical foundation but are still in the initial research stage. In summary, the introduction of experience and the extension of the interpretation of the main theme of the relative dispersion have not formed a systematic research framework, in particular, lack of quantitative measurement of the level of development of integration of rural industries, the effect of integration, the driving mechanism and other aspects of the research. Based on this, this paper proposes further research directions on rural industrial integration:

Firstly, from the perspective of modern agriculture and the modern service industry, through reviewing relevant literature, we construct a set of systematic and comprehensive evaluation indexes of modern agriculture and the modern service industry through the integration model measurement to analyze the integration level of modern agriculture and modern service industry and regional differences in China. Secondly, from the empirical point of view, we explore the factors affecting the integration and development of China's modern agriculture and modern service industry and put forward policy suggestions to accelerate the integration and development of China's modern agriculture and modern service industry according to the empirical results. The third is to sort out the excellent cases of the integration and development of modern agriculture and the modern service industry at home and abroad, from which we can find a suitable model for integrating and developing the two industries in China.

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