Original Paper

Research on the Mechanism and Path of Rural Industry Revitalization Enabled by Digital Economy in Southwest China

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Abstract

Establishing a long-term mechanism for empowering rural industry revitalization through the digital economy is the key to comprehensively promoting rural revitalization during the 14th Five Year Plan period. This article analyzes the influencing factors and characteristics of different models of rural industry development in the southwest region, and identifies specific models that can match the digital economy's empowerment of different industries in the southwest region. And from the perspective of supply side structural reform, the research on the development mechanism and implementation path of rural industry revitalization in Southwest China is placed under the national strategy of digital economy, aiming to provide scientific decision-making basis for the matching mode, mechanism design, and implementation path in the process of rural industry revitalization in Southwest China from the perspective of supply side structural reform.

Keywords

rural industrial revitalization, digital economy, Southwest China

1. Introduction

In 2021, the Central Government's "No.1 Document" clearly stated the need to "comprehensively promote rural revitalization and modernization of agriculture and rural areas, consolidate and expand the achievements of poverty alleviation and effectively connect with rural revitalization". In the "window period" facing the "14th Five Year Plan" and achieving the second centenary goal of socialist modernization, fully implementing the new development concept, smoothly advancing agriculture and rural areas to a new stage of development, and achieving higher quality modern agriculture have become important tasks that cannot be ignored at present. At present, China still faces shortcomings that hinder the high-quality development of agriculture, such as outdated application technology, unclear investment capital growth, decentralized production and operation, high production costs and low returns of agricultural products. This means that relying on digital technologies such as big data and blockchain to break through the bottleneck of traditional agricultural development is not only a key issue that needs to be solved urgently to fully achieve rural revitalization and accelerate the promotion of high-quality agricultural development. It is also an important task to promote digital agriculture to realize "digital China". Especially for the southwest region, which contains rich rural industrial resources, it is one of the key tasks of rural industry revitalization in the new era to realize the deep integration of agricultural technology, data, industry and scene through digital technology and accelerate the Digital transformation of agriculture and rural areas. Therefore, in the context of the promotion of the rural revitalization strategy, relying on the resource endowment advantages of the southwest region, in-depth and systematic research on the digital economy enabling rural industry revitalization in the southwest region and other related issues has important theoretical and practical significance for the realization of the goal of common prosperity in China and rural industry revitalization in the western region.

2. Literature Review

(1) Research status on the revitalization of rural industries. The research on the revitalization of rural industries mainly focuses on two aspects: first, industrial integration and development. Rosenberg (1963) and Yoffie (1997) believe that industrial integration development is not only an important research direction in industrial economics and information economics, but also has become a mainstream industrial form with social development. Zhou Zhenhua (2002), Jiang Changyun (2016), Guo Jun (2019) and others believe that the fundamental purpose of integrated development is to leverage the versatility of agriculture, enhance agricultural added value, stimulate farmers' endogenous motivation, and achieve better production efficiency and economic benefits. The second is the high-quality development of agriculture and rural areas. The definition of the connotation of rural industrial revitalization in China stems from a deep understanding of high-quality agricultural and rural development, and an economic development model that better meets the growing practical needs of the people (Wei Houkai, 2020), fully reflecting the five development concepts (Shi Bo & Zhang Bingyao, 2018; He Lifeng, 2018; Yang Weimin, 2018). Emphasizing the coordinated development of multiple parties, it should involve various perspectives such as economy, society, ecological environment, the state, and opening up to the outside world (Ren Baoping, 2018; Zhao Xiao, 2020; Gao Peiyong, 2020). It should also achieve high efficiency, stable growth, and innovation driven development from multiple aspects such as supply and demand, input-output, and income distribution (Li Wei, 2018; Lin Zhaomu, 2018). Focusing on the revitalization of rural industries, some literature suggests that it should be achieved from multiple dimensions such as agricultural production and management systems (Zhong Yu, 2018; Xia Xianli et al., 2019). It is an organic combination of rural ecology, culture, governance, agricultural production, and farmers' lives, and should be consistent with the overall goal of rural revitalization (Luo Biliang, 2020; Chen Mingxing, 2020).

(2) The current research status of the digital economy. One is from a conceptual perspective. Don Tapscott (1996) first proposed the concept of the digital economy, pointing out that the digital economy is a new type of economic relationship that emerged after the emergence of internet technology. Institutions such as USDC (1999), USBC (2001), DBCDE (2013), and OECD (2016) define the digital economy as the constantly developing new technologies such as the Internet and big data, as well as their derived economic and social activities. Secondly, from the perspective of scope, the core part is the digital sector itself. In a narrow sense, it refers to new business models created through the digital economy, such as platform economy and e-commerce, while in a broad sense, it includes all digitized economic activities, such as precision agriculture, digital media, digital transactions, etc. (Bukht & Heeks, 2017; Peng Wensheng, 2019; Chen Yongwei, 2020). Thirdly, from the perspective of the composition of the digital economy, digital infrastructure is the fundamental support for the digital economy, and digital industrialization, as a pillar and leading industry, is steadily advancing. Among them, agricultural digitization is a prominent weakness in the development of the digital economy (China Academy of Information and Communication Technology, 2019).

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(3) The current research status of digital economy assisting agricultural and rural development. Pilat (2005) and Zheng Shilin (2014) believe that informatization has a promoting effect on productivity improvement. Focusing on the agricultural field, research conclusions on the impact of informatization on total factor productivity in agriculture include: firstly, it has a significant promoting effect (Oguttu et al., 2014; Zhu Qiubo et al., 2019); Secondly, the impact is not significant (Steeneveld et al., 2015; Li Shimei & Yin Xiwen, 2017); The third is the presence of nonlinear or heterogeneous effects (Han Haibin & Zhang Li, 2015; Liu Tao et al., 2019). As agricultural production itself is characterized by regionalism, periodicity, seasonality and small elasticity of demand for agricultural products, farmers lack the original capital accumulation, entrepreneurial talent, data information and other production factors, which makes the development of the agricultural sector lag behind the urban sector for a long time (Zhang Xiaoshan et al., 2018). At the same time, issues such as information asymmetry (Stiglitz, 1981; Zhou Hongwei et al., 2019), financial exclusion and financial threshold effects (Leyshon et al., 1993; Su Fang et al., 2016), inadequate rural infrastructure, and mismatched supply and demand of financial resources and services (Wen Tao et al., 2016; He Guangwen et al., 2019) have greatly constrained agricultural development. The advantages of the digital economy, such as renewability, non competitiveness, inclusivity, and non exclusivity (Bukht et al., 2018), can empower and enhance other production factors through integration. The integration and development of digital economy and agriculture and rural economy can reduce information asymmetry, expand the scale effect of agricultural production, optimize factor flow channels, effectively improve resource utilization efficiency, increase farmers' income and happiness, and promote the transformation and upgrading of agriculture and rural modernization (Irwin et al., 2010; Hailu et al., 2014; Huang Jikun, 2018; Zhang Xun et al., 2019; Xiao Xu et al., 2019).

(4) The main problems in existing research. Scholars at home and abroad have conducted certain research on the empowerment of rural industries through digital economy, and the research results cover different fields, providing a foundation for this research topic. However, at least three aspects of the problem still need to be solved: 1) Although existing research has raised the universal issue of digital empowering the integration of agriculture and rural development, there is relatively little research on the spatial spillover effects of high-quality agricultural development from the perspective of digital economy composition, Neglecting the spatial correlation characteristics of regional economic activities in China. 2) Although existing research has explored the models and paths of digital economy empowering the development of rural industries, it has overlooked the heterogeneity and particularity of regional industries due to the internal and external differences of different local governments, markets, and social participants. Therefore, specific development models that are suitable for the actual situation of rural industries in the southwest region should be matched. In fact, this is the key to the success of digital economy empowering rural industry revitalization. 3) Existing studies have described the development of rural industries empowered by the digital economy through qualitative research, but they have not yet been able to provide corresponding evidence through appropriate quantitative

research on how to determine the influencing factors of rural industry development empowered by the digital economy in southwest China, match different industrial development models, and the operation mechanism and implementation path of rural industry development empowered by the digital economy in southwest China.

(5) The main ideas for solving the above problems in this project. In response to the existing research problems, this topic focuses on breakthroughs and research: 1) Combining the characteristics and internal laws of local governments, markets, and participating entities, taking the primary, secondary, and tertiary industries in rural areas of Southwest China as the research object, and focusing on the particularity of industries in Southwest China, this paper studies the issue of digital economy empowering the development of rural industries in Southwest China from both theoretical and empirical perspectives. 2) By analyzing the influencing factors of the digital economy on the development of rural industries in the southwest region, and combining with the practical characteristics of rural industry development in the southwest region, a real option model is constructed to match the specific models of different industry development, ensuring the feasibility, long-term effectiveness, and sustainability of the digital economy empowering the development of rural industries in the southwest region. 3) Introducing various methods such as mathematical analysis, game analysis, and empirical analysis into the research topic, changing the drawbacks of existing literature that only uses qualitative methods for research.

3. Research Contents

3.1 Research on Pattern Matching of Digital Economy Empowering Rural Industrial Revitalization in Southwest China

The existing research only focuses on the operational mechanism of the integration of digital economy and agricultural and rural economy, neglecting the importance of different regions as development entities, and the impact of internal and external differences in rural industries in the southwest region on the effectiveness of digital economy empowerment; The second is that only the practical model of digital economy empowering rural industrial development with Chinese characteristics is provided, ignoring the differences in regional differences and the differences in local governments and regional development entities themselves. Different regions should choose different practical models for rural industrial development based on the actual situation. 1) Research on the influencing factors of digital economy empowering rural industrial development in Southwest China. By clarifying the external constraints (such as digital infrastructure support, legal and regulatory mechanisms) and internal conditions (such as digital literacy, development status, etc.) that the digital economy empowers the development of rural industries in the southwest region, we empirically test the influencing factors of the digital economy empowering the revitalization of rural industries in the southwest region, and clarify the internal and external driving forces for the revitalization of rural industries in the southwest region. 2) Research on the Model of Empowering Rural Industry Revitalization in Southwest China

with the Digital Economy. By clarifying the development characteristics of different industries in rural areas in the southwest region, classifying the operation modes of different formats, constructing a real option model, calculating the benefits of digital economy empowering rural industry development under different modes, and matching the specific models of digital economy empowering different types of industry development. 3) Research on the Efficiency of Digital Economy Empowering Rural Industrial Revitalization in Southwest China. By clarifying the development conditions and resource endowment characteristics of rural industries in the Southwest region, and utilizing actual data from different industries in the rural areas of the Southwest region, a multidimensional evaluation index for the empowerment of rural industries in the Southwest region by the digital economy is designed. A three-stage DEA model is used to measure and analyze the efficiency of the empowerment of different industrial models by the digital economy.

3.2 Research on the Construction Mechanism of Digital Economy Empowering Rural Industrial Revitalization in Southwest China

The existing literature mostly focuses on the universality of digital economy empowering rural industrial revitalization. Firstly, it overlooks the need to pay attention to the relationship between different participating entities and other interest groups in different regions; The second is the failure to attach importance to the collaborative cooperation between local governments, markets, and social participation entities, which will affect the effectiveness of digital economy in empowering rural industrial development. 1) Research on the Linkage Mechanism of Digital Economy Empowering Rural Industrial Revitalization in Southwest China. Based on the perspective of rural industry revitalization in the southwest region, guided by market demand, this study explores the advantageous roles of different entities including government, market, and rural residents, constructs an evolutionary game model, and analyzes the co construction behavior in the process of empowering rural industry revitalization in the southwest region with the digital economy. 2) A Study on the Incentive Mechanism of Digital Economy Empowering Rural Industrial Revitalization in Southwest China. Based on the perspectives of local governments, markets, and social participants, guided by market demand, this study distinguishes the incentive forces of local governments, enterprises, and rural residents, constructs an evolutionary game model, and explores the establishment of a benefit sharing mechanism among local governments, markets, and social participants. 3) A study on the multi center collaborative guarantee mechanism for empowering rural industrial revitalization in Southwest China with the digital economy. Based on the perspective of multi center theory and collaborative governance theory, clarify the advantages and roles of various participating entities such as local governments, market entities, social organizations and units, and different industrial employment groups in the southwest region, construct a cooperative game model, reshape the relationship between various participating entities, and construct a collaborative security model with market leadership, social advocacy, and joint participation of new professional farmers.

3.3 Research on the Implementation Path of Empowering Rural Industry Revitalization in Southwest China with Digital Economy

Although existing research has proposed the implementation idea of digital economy empowering the integration of agriculture and rural industries, firstly, it fails to combine the regional characteristics of the Southwest region itself, and secondly, it fails to combine the inherent characteristics and laws of the development of rural primary, secondary, and tertiary industries. 1) Research on the Path Design of Digital Economy Empowering Rural Industrial Revitalization in Southwest China. By examining the models of digital economy empowering rural industry revitalization in the eastern, central, and western regions, and based on the levels of local governments, markets, and social participation entities, design institutional, policy, and collaborative paths for digital economy empowering rural industry revitalization in the southwestern region, as well as safeguard measures for digital economy empowering rural industry revitalization, To break free from the "path dependence" of digital economy empowering the integrated development of agriculture and rural economy under existing standards. 2) Case study on empowering rural industrial revitalization in the Southwest region with the digital economy. By selecting cases of digital economy empowering rural industrial development under different modes and industry types, we attempt to apply the theory, strategy, and implementation path proposed in the study. We empirically test the theoretical research results of the project using methods such as double difference regression model (DID) and threshold regression model, and gradually feedback and improve it in order to promote its implementation in other regions.

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