

Research on Strategies for Enhancing Rural E-commerce Participation: A Case Study of Jiaohe City, Jilin Province

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Abstract

This article focuses on the path of increasing rural e-commerce participation in Jiaohe City, Jilin Province. From the perspectives of multiple stakeholders such as farmers, enterprises, and the government, the article systematically analyzes the constraints of insufficient participation in technology, infrastructure, and policy culture. In terms of the weak digital literacy of farmers, lagging logistics system, and low degree of product standardization in Jiaohe City, corresponding strategies such as talent cultivation, supply chain optimization, and brand empowerment are proposed to explore the endogenous driving force construction mechanism of the rural e-commerce ecosystem. The research reveals that the core contradiction in the development process of regional e-commerce is reflected in the insufficient coordination of the main body and the inefficient integration of resources, emphasizing the need to activate market vitality through policy guidance. The research conclusion can provide a corresponding theoretical framework for the differentiated development of county-level e-commerce, and has practical reference value for the digital transformation of rural economy in the context of rural revitalization.

Keywords

Rural e-commerce, Participation rate, Enhancement strategy, Jiaohe City.

1. Introduction

The current reality of county-level e-commerce is that there is a lack of active participation from the main body and a low degree of industrial chain collaboration, which is particularly typical in Jiaohe City, Jilin Province. Jiaohe City is an excellent tourist city in China, a national demonstration city for leisure agriculture and rural tourism, a national cultural advanced city, one of the top ten excellent edible mushroom bases in China, and a national comprehensive demonstration city for e-commerce entering rural areas. Although the city has the advantage of characteristic agricultural product resources, many problems such as lagging e-commerce application ability of farmers, single enterprise operation mode, and fragmented policy support system have seriously constrained the healthy development of the e-commerce ecosystem. This article attempts to break through the traditional single dimensional analysis framework and deconstruct the path of increasing rural e-commerce participation from the perspectives of three dimensions: subject capacity building, industrial ecological reconstruction, and institutional supply optimization. By combining field research with theoretical deduction, this study aims to reveal the underlying logic of e-commerce development in economically underdeveloped areas, and explore new ideas for solving the problem of mismatch between resource endowment and market conversion rate. This has practical significance for reconstructing the mechanism of urban-rural factor flow.

2. Theoretical Basis and Core Connotation of Rural E-Commerce Participation

2.1. Evaluation Dimensions of Rural E-Commerce Participation

Since 2014, "rural e-commerce" has been officially written into the No. 1 central document of the central government, and has become an important means to promote the new engine of agricultural and rural economic development and help poor areas achieve leapfrog development. When analyzing the diverse participants in rural e-commerce, the consideration at the farmer level focuses on the subjective initiative and operational ability of producers and operators to connect with digital channels, specifically manifested in their deep understanding of e-commerce platform functions, adaptability to new formats such as live streaming sales, and the ability to connect daily production with market demand. The core of the enterprise dimension lies in how market entities construct a service network that conforms to the characteristics of rural areas, including the penetration efficiency of logistics terminals, the construction progress of agricultural product standardization systems, and the compatibility with traditional production models in the process of technological sinking. The role of the government is reflected in the synergistic effect between policy tools and infrastructure, with a focus on the cultivation mechanism of regional public brands, the incubation path of e-commerce talents, and the actual effectiveness of cross departmental resource integration. Especially in Jiaohe City, which has significant geographical and cultural characteristics, the integration status of characteristic mountain products and e-commerce ecology has become a key indicator to measure the quality of government enterprise cooperation.

2.2. The Influencing Factors of Rural E-Commerce Participation

The formation of rural e-commerce participation is influenced by multiple intertwined factors. The level of technological application determines the operational efficiency of market entities. The ease of use and compatibility of digital tools have become key prerequisites for farmers to access the internet. The popularity of smart terminals and the quality of network transmission directly affect the smoothness of transaction processes. The completeness of infrastructure constitutes the physical support for the e-commerce ecosystem, while the spatial layout of logistics nodes and the application scope of cold chain technology constrain the circulation radius of agricultural products. The accessibility of road transportation networks is related to the bidirectional flow efficiency of urban and rural factors. The policy environment shapes the market pattern through institutional supply and resource allocation, and the financial support and innovation plans of local governments affect the investment decisions of enterprises. The completeness of the regulatory system is related to the compliance costs and risk expectations of business entities. The cultural cognitive differences deeply penetrate into e-commerce practices, and regional consumption habits and values affect the market adaptability of products. The interpersonal trust network of rural society and the credit evaluation mechanism of digital platforms form a complementary effect, and the degree of organization of community communities regulates the speed and depth of new technology diffusion.

3. Analysis of the Reasons for the Low Participation of Rural E-Commerce in Jiaohe City

3.1. Lack of E-Commerce Awareness and Digital Literacy Among Farmers

Part of the farmers in Jiaohe City still have a fixed understanding of the value of e-commerce channels in the traditional sales model, relying on offline wholesalers to purchase production and sales paths for a long time, which leads to insufficient driving force for actively accessing the internet, especially in the operation of smartphones to screen product information or

complete online payments, where there are technical barriers. The seasonal characteristics of field work are difficult to match with fragmented learning needs, and although village level e-commerce service stations have been covered, they often face the dilemma of lack of practical guidance. Left behind middle-aged and elderly groups often find themselves in a passive position when faced with specialized requirements such as live streaming script design or logistics information tracking. There is a gap in adaptation between regional dialect communication habits and standardized e-commerce customer service systems. Some farmers miss potential market opportunities in the online negotiation process due to their inability to accurately describe the quality differences of specialty products such as *Ganoderma lucidum* and black fungus.

3.2. Shortage of Rural E-Commerce Talents and Limited Technical Capabilities

The insufficient talent reserve and technological application bottleneck faced by rural e-commerce development are deeply related to regional economic structure and education resource allocation. The outflow of young labor force has led to an aging of local e-commerce operators, and the left behind group has cognitive barriers to new marketing tools such as live streaming promotion and data analysis. The incomplete closed loop of professional training system has resulted in a lag in knowledge update speed compared to the industry iteration cycle. The weak technical capabilities are reflected in the low coverage of agricultural product traceability systems and intelligent warehouse management applications. Traditional business thinking restricts the effectiveness of digital tools such as big data product selection and consumer profiling analysis. The urban-rural differences in network infrastructure further widen the technological gap, and some village level service stations lack equipment maintenance capabilities, leading to long-term inefficient operation of intelligent terminals. There is a structural mismatch between the professional settings of local vocational colleges and the demand of the e-commerce industry. The lack of industry university research cooperation platforms makes it difficult to transform theoretical teaching into practical skills. This gap between talent supply and industry demand directly weakens the sustainable development momentum of the e-commerce ecosystem.

3.3. The Rural Logistics Distribution System is Not Perfect

Some administrative villages are limited by the objective conditions of mountainous areas and scattered village distribution, and the planning of logistics transportation routes is difficult to match the timeliness requirements of fresh agricultural products. The frequency of cold chain vehicles passing through mountain roads and the preservation period of vulnerable goods such as mushrooms and blueberries form a real contradiction. Township level storage nodes are limited by the size of the site and the configuration of temperature control equipment, often resulting in the phenomenon of geographical indication products such as Huangsongdian fungus being forced to lower storage and transportation standards during the consolidation stage. Village level collection points often encounter problems such as mixed product specifications affecting subsequent circulation efficiency due to the lack of standardized sorting processes. The coverage density of the logistics information tracking system within the county is insufficient, making it difficult for farmers to predict abnormal conditions during transportation when shipping. Coupled with the sustained impact of winter ice and snow weather on road capacity, some orders are forced to choose detour plans, resulting in simultaneous pressure on customer experience and transportation costs.

3.4. Insufficient Standardization and Branding of Rural E-Commerce Products

The competitiveness of agricultural products in the e-commerce field is limited by the mismatch between the decentralized management model of the production end and the standardized demand of the market end. Production units led by small farmers often formulate

planting regulations based on traditional experience, and the differences in soil fertility and cultivation habits between different plots lead to fluctuations in the appearance specifications and quality stability of similar crops. This non-standard feature is difficult to meet the refined requirements of e-commerce platforms for product grading and classification. At the level of brand building, the cultural connotations and consumption scenarios of regional characteristic agricultural products have not yet formed a deep connection. Most operators have insufficient investment in brand elements such as packaging design and story mining, which makes it difficult for consumers to establish clear quality awareness and emotional resonance when purchasing online. Due to the lack of authoritative certification marks and quality traceability marks, some primary processed products face implicit concerns from consumers about food safety and authenticity of origin when sold through e-commerce channels. The construction process of regional public brands is relatively slow, and it has not effectively integrated dispersed individual brands to form a cluster effect, further weakening market bargaining power.

4. Strategies for Enhancing Rural E-commerce Participation in Jiaohe City

4.1. Strengthen Farmers' E-Commerce Training and Digital Literacy Education

Local governments can rely on the teaching staff of vocational colleges and collaborate with e-commerce platforms to develop modular courses that break down practical skills such as short video operation and order management into differentiated teaching content for spring plowing preparation and idle periods, allowing farmers to accumulate knowledge through mobile terminals even during fragmented time in the fields. Village level organizations should activate the educational function of public spaces such as cultural auditoriums, equip local teaching assistants with the ability to communicate in dialects, design operation manuals for the middle-aged and elderly, and use life scenes such as drying corn, pickling pickled Chinese cabbage to analogy the commodity shelves and customer maintenance processes in e-commerce operations, gradually eliminating the psychological barriers to the use of digital tools [3]. E-commerce service sites need to extend theoretical training to practical aspects. During the peak sales season of specialty products such as Huangsongdian fungus and Baishishan pancakes, they should organize farmers to participate in on-the-job training throughout the entire process from product shooting to logistics tracking. They should use real order data to review and optimize operational strategies, transforming abstract business concepts into tangible experience accumulation. Mobile operators and Internet enterprises can jointly develop a dialectal skill certification system, link traffic rewards with online learning duration, stimulate farmers' enthusiasm to explore cloud classes independently, focus on skills competition activities after autumn harvest, and form a community learning atmosphere of experience sharing through live cargo practice drills.

4.2. Introduction and Cultivation of Rural E-Commerce Professionals

Vocational colleges in Jiaohe City can collaborate with e-commerce platforms to develop customized course systems that integrate practical skills such as agricultural product photography and composition, as well as detail page copywriting, into the teaching syllabus. The teaching locations will be directly located in village level cooperative warehouses or family farm processing rooms, and the lecturer team will be composed of store operators with more than three years of practical experience in the county. Students will be regularly organized to participate in the entire process of real order processing during the peak season of harvesting black fungus in Huangsongdian. The township employment service center needs to establish an incentive mechanism for young talents to return home, and set up night live training courses for the post-95s who return to their hometowns to start businesses. It will adopt the old leading new model to allow skilled anchors and novices to share equipment resources and fan traffic

pools, and hold monthly agricultural product packaging design competitions to stimulate creative vitality. County level e-commerce associations should promote leading enterprises to sign targeted training agreements with secondary vocational schools, set up ladder type training modules in e-commerce customer service, logistics management, quality control testing and other posts, arrange students to follow enterprise supervisors to learn while working in blueberry sorting workshops or mushroom drying lines, directly connect the graduation assessment with the post gap of township service stations, and give priority to graduates who master Tiktok group purchase configuration or Kwai store background operations.

4.3. Improve the Rural Logistics Distribution System

The key to building an efficient logistics distribution network in Jiaohe City lies in activating the synergistic effect of existing transportation resources. Logistics enterprises can negotiate with township passenger bus operators to open a dedicated line for carrying goods, and use fixed daily trips to transport packages from village level e-commerce service stations to county-level distribution centers. Farmers only need to store their goods at the village entrance convenience store during the market to complete the shipping process, saving the transportation cost of separately going to the county logistics network. The village committee should coordinate the conversion of idle homesteads or village collective houses into temporary storage and distribution points, dynamically adjust storage space according to the market cycle of local specialties such as pine nuts and hazelnut mushrooms, equip simple shelves and moisture-proof mats to reduce the loss rate caused by outdoor stacking of goods, organize left behind women to serve as part-time tally clerks, and use the idle period of agriculture to preliminarily sort and label the goods entering the warehouse. Agricultural cooperatives need to take the lead in meeting the demand for fresh food transportation, jointly leasing medium-sized trucks with refrigeration functions with surrounding villages, and implementing scheduled and fixed-point collection during the peak picking period of perishable products such as blueberries and black fungus. They should plan a circular transportation route covering the main production areas in advance, share real-time location information with vehicle mounted GPS devices, and facilitate farmers to estimate the optimal picking and packing time.

4.4. Promote the Standardization and Branding of Agricultural Products

The agricultural cooperative takes the lead in formulating a classification and screening operation guide for black fungus. A visual comparison card is set up based on the diameter of the flower and the thickness of the ear piece. Members use a uniformly distributed light transmittance detector to determine the drying compliance during the harvesting process. The dried finished products are packed into sealed cans with moisture-proof coatings according to the moisture content range, and the outer packaging is printed with traceability code related to the information of the growers and the harvesting batch. The municipal quality inspection department shall establish a mobile service team equipped with portable pesticide residue detectors, and conduct rapid screening of sugar content and oxidation indicators of blueberries, pine nuts and other products that are about to be stored in various administrative villages every month. Products that meet the standards shall be awarded the "Changbai Mountain Treasure" certification mark, and batches that do not meet the standards shall be transferred to local supermarkets for digestion. The local cultural center needs to excavate intangible cultural heritage elements such as Huangsongdian lumberjacks' license plates and mushroom collection customs. It has commissioned the Academy of Fine Arts to integrate red pine totems and rime patterns into the packaging design, and collaborated with a short video team to shoot behind the scenes videos of harvesters telling stories about their forest work. An interactive button called "Click to View Collectors' Field Work" will be set up on the e-commerce details page, and

consumers will receive a bookmark of the 24 solar terms that record the growth cycle of *Ganoderma lucidum* with their order.

4.5. Intensify Policy Support and Financial Services Efforts

The government can expand the existing list of agricultural subsidies to the field of e-commerce dedicated storage facility renovation, and provide a fixed amount of building materials subsidy per square meter for newly built refrigerated cellars or drying rooms on family farms. Cooperatives that purchase cold chain transportation vehicles will receive fuel subsidies based on quarterly transportation mileage. At the same time, the power department will coordinate the implementation of electricity pricing standards for initial processing of agricultural products in village level packaging workshops. Rural Commercial Bank should develop order pledge loan products, allowing farmers to apply for a maximum credit limit of 200000 yuan based on the sales records of the e-commerce platform for six months. For geographical indication products such as Huangsongdian fungus, a warehouse receipt financing plan should be designed, and a "borrow and repay" function module should be opened on the mobile banking client to facilitate fund turnover. Export grade mushroom suppliers who use standardized packaging should be provided with discounted rates for letter of credit. The supply and marketing cooperative system needs to integrate the resources of express delivery outlets within the county to establish a shared distribution center. E-commerce households with an average daily shipment volume of over 100 orders will be exempted from three months of warehouse management fees. In conjunction with insurance companies, a combination package of fresh logistics delay insurance and cargo damage insurance will be launched. A fast claims channel will be set up for transportation accidents caused by road icing in winter. Regular bank enterprise docking meetings will be held to invite the responsible persons of express delivery companies to directly negotiate freight tiered discount plans with blueberry growers.

5. Conclusion

The increase in rural e-commerce participation in Jiaohe City is essentially a process of transformation from traditional agricultural economy to digital production relations, and the key to development lies in the two-way interaction between the cultivation of subject capacity and the optimization of institutional environment. In the face of pain points such as a digital literacy gap and weak logistics infrastructure among farmers, it is necessary to establish a long-term training mechanism and a coordinated infrastructure investment model between government and enterprises, and strengthen the quality traceability system of agricultural products to break through the bottleneck of branding. In the future, attention should be paid to the reshaping effect of e-commerce platform algorithm logic on farmers' business behavior, and explore the path of deep integration of county-level characteristic industrial chains and digital technology. It is suggested that local governments establish a dynamic policy evaluation mechanism and guide social capital to participate through innovative financial tools, thereby forming a sustainable development pattern where multiple interests can be shared.

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