The Role of E-commerce Livestreaming in Boosting Rural Economic Development under the Background of Rural Revitalization: Models, Challenges, and Countermeasures

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Abstract. Amidst the rapid development of the global digital economy and the advancement of rural revitalization strategies, this study examines the role of e-commerce livestreaming as an innovative model that integrates digital technology with the rural economy. Using literature review and case analysis methods and drawing on theories from agricultural economics, digital marketing, and rural sociology, the research reveals that in 2023, rural ecommerce livestreaming in China achieved a transaction volume of 586 billion yuan, a yearon-year growth of 65.3%, demonstrating significant advantages in reducing circulation costs, enhancing brand value, and creating employment opportunities. Three main models have emerged—farmer-led, enterprise-led, and government-supported—with practical cases such as Dongfang Zhenxuan and Danling citrus livestreaming validating their effectiveness. However, challenges remain, including insufficient product standardization, a shortage of professional talent (with a gap of 1.2 million people), difficulties in traffic acquisition for small and medium-scale farmers, underdeveloped cold chain logistics (coverage below 35%), inadequate regulation, and intense homogeneous competition. The study concludes by proposing a multi-stakeholder collaborative governance framework involving governments, enterprises, village-level organizations, farmers, and industry associations to promote sustainable development of rural economy and society.

Keywords: E-commerce Livestreaming, Rural Economic Development, Case Analysis, Rural Revitalization

1. Introduction

Against the macro backdrop of the accelerated development of the global digital economy, rural revitalization strategies have become a crucial pathway for many countries to address the imbalance between urban and rural development. As an innovative model integrating digital technology with the rural economy, e-commerce livestreaming injects new momentum into rural development by restructuring the agricultural product circulation system, increasing value chain returns, and promoting the integration of the primary, secondary, and tertiary industries. China has continuously strengthened policy support in this regard; the 2025 Central No. 1 Document explicitly mandates "promoting the high-quality development of rural e-commerce," marking the elevation of e-

commerce livestreaming from a market-driven initiative to a key component of national strategy. From an international perspective, this model is highly aligned with the United Nations Sustainable Development Goals (SDGs) of eradicating poverty and fostering economic growth. By creating digital employment opportunities and expanding income channels, it provides practical references for global rural transformation. However, the practice of e-commerce livestreaming in rural areas still faces systemic challenges, such as weak infrastructure, prominent digital divides, and insufficient institutional guarantees, which urgently require theoretical guidance and practical insights from academic research.

Against this backdrop, scholars have conducted in-depth studies from multiple perspectives. Existing research primarily focuses on the economic benefits, practical dilemmas, and promotion paths of e-commerce livestreaming. Regarding benefits, "short video + live streaming" has become a key driver for rural revitalization—expanding agricultural product sales, promoting rural cultural inheritance, and improving farmers' information literacy—with its rich content and high interactivity, as Dou and Jia stated [1]. Live e-commerce for agricultural products, an important tool for rural revitalization, has broadened product upward channels, promoted industrial upgrading, and enhanced rural brand value, though it faces systemic challenges, according to Wang [2]. With policy support and better infrastructure, China's rural e-commerce has grown fast, and live e-commerce boosts farmers' income, yet practical obstacles remain, as Nian and Yang noted [3]. Some regions have built e-commerce-driven "common prosperity workshops" to empower rural areas, as Dong and Wang illustrated with local practices [4]; Zhang and Chen added that a multi-subject live ecommerce ecosystem supports strong collective economy villages [5]. However, issues like weak infrastructure, talent shortage, poor product standardization, and homogeneous content hinder its development, as Wang, Nian and Yang, Chen, Li et al., and Yang all pointed out [2,3,6-8]. Weak brand awareness and unstandardized "new farmers" also restrict progress, per Nian and Yang, Yang, Zhu and Feng, and Yang [3,8-10]. To solve these, Dou and Jia suggested strengthening infrastructure; Wang proposed optimizing supply chains [1,2]. Chen advocated building talent training systems; Li et al. pushed for local "village broadcast" talents [6,7]. Wen stressed digital technology integration to improve efficiency [11], while Chen and Shi recommended "live streaming +" formats for industrial transformation [6,12]. These measures aim to integrate live e-commerce with rural industries and achieve comprehensive rural revitalization, as Yang, Tao, and Yan noted [10,13,14].

Nevertheless, existing research has obvious limitations. On the one hand, most studies focus on local case studies or single-issue analyses, lacking systematic comparisons and theoretical integration of rural e-commerce livestreaming models across different regional types and development stages. On the other hand, research perspectives exhibit a "fragmented" characteristic: factors such as infrastructure, policy mechanisms, technology application, and talent systems have not been integrated into a unified analytical framework, and there is a particular lack of in-depth exploration into the internal mechanisms and long-term paths of digital technology empowering livestreaming e-commerce. Additionally, research on the integration mechanism between digital technology and livestreaming e-commerce is insufficient, with a dearth of forward-looking analysis on the trends of digital transformation.

To better enrich and supplement the existing research results, this study intends to construct a comprehensive model of e-commerce livestreaming's path to boosting rural economic development. Employing literature research and case analysis methods, and integrating theories from agricultural economics, digital marketing, and rural sociology, this study systematically analyzes the collaborative mechanisms of infrastructure, human capital, policy environment, and technological

innovation. Through comparative research on multiple cases, it examines the adaptability of e-commerce livestreaming models under different regional conditions, thereby proposing a multi-stakeholder collaborative governance framework involving governments, platforms, farmers, and consumers. This framework aims to provide theoretical support and practical guidance for e-commerce livestreaming to facilitate rural revitalization. The research not only helps remedy the fragmentation of existing studies but also offers systematic solutions for policymakers, promoting the transition of e-commerce livestreaming from isolated breakthroughs to systematic development.

2. Current status and advantages

2.1. Current status

Currently, rural e-commerce livestreaming is developing at an unprecedented pace, emerging as a key driver of the transformation and upgrading of the rural economy. In terms of development status, its scale growth is remarkable. According to the latest statistics from the Ministry of Agriculture and Rural Affairs, the transaction volume of rural e-commerce livestreaming in China reached 586 billion yuan in 2023, with a year-on-year growth rate of 65.3%—far exceeding that of traditional e-commerce platforms. The participating entities exhibit diversification: e-commerce livestreaming operations have been launched in over 3,000 counties and districts nationwide, involving more than 5 million farming households and over 180,000 agricultural enterprises, with cumulative government support funds at all levels exceeding 15 billion yuan. These data fully demonstrate that e-commerce livestreaming has become an important channel for agricultural product sales.

The regional distribution shows distinct characteristics, presenting a pattern of "eastern leadership and central-western catch-up." Relying on sound industrial chain foundations and advanced digital infrastructure, the eastern coastal regions have achieved relatively mature development of ecommerce livestreaming. The Yangtze River Delta region, represented by Shanghai, Jiangsu, and Zhejiang, accounts for 48.7% of the national total sales of agricultural products via livestreaming, with high-end agricultural products accounting for over 60%. These regions have generally established a complete livestreaming e-commerce ecosystem, forming an integrated industrial chain covering product planning, livestream operation, and logistics distribution. In contrast, although the central and western regions started late, they have shown strong development momentum. For example, characteristic agricultural products such as Luochuan apples (Shaanxi Province) and Pujiang kiwifruits (Sichuan Province) have achieved leapfrog development through livestream sales, with an annual growth rate exceeding 85%. Leveraging their unique advantages in agricultural resources and combining local cultural features, these regions have explored development paths tailored to their actual conditions.

2.2. Advantages

First, in terms of reducing circulation costs, the "producer-to-consumer direct supply" model effectively compresses intermediate circulation links. Traditional agricultural product circulation typically involves multiple stages, including local wholesalers, distribution wholesalers, and retailers, with each stage adding a 15%–20% markup. In contrast, livestreaming e-commerce reduces intermediate links to 1–2, increasing farmers' profits by 25%–35%. Taking citrus sales as an example: in the traditional channel, farmers receive a purchase price of 2.5 yuan per jin (0.5 kg),

while the retail price in the market reaches 8 yuan per jin; through livestreaming sales, however, farmers can directly sell to consumers at 6 yuan per jin at the production site.

Second, in brand building, livestreaming e-commerce significantly enhances product awareness through situational displays. By real-time broadcasting the entire process of agricultural product planting, management, and harvesting, consumers gain an intuitive understanding of product quality and characteristics. Surveys show that agricultural products sold via livestreaming can achieve a brand premium of 20%–30%. For instance, Yangcheng Lake hairy crabs have increased their brand value by 35% by showcasing their breeding environment and management processes through livestreaming.

Third, in promoting employment, e-commerce livestreaming has created a large number of new jobs. It directly drives over 2 million jobs in roles such as anchors, operators, live controllers, and customer service, and indirectly boosts more than 3.5 million jobs in related industries including packaging, logistics, and marketing. These positions not only provide new career options for rural youth but also attract a large number of college graduates to return to their hometowns for entrepreneurship. Statistics indicate that in 2023, the per capita income of rural residents increased by 4,200 yuan driven by e-commerce livestreaming-related industries, making it an important channel for farmers to increase their income.

3. Typical models and case analysis

3.1. Classification of typical models

3.1.1. Farmer-led livestreaming model

This model takes individual farmers as the main body, conducting livestreaming through personal social media accounts (e.g., Douyin, Kuaishou). It is characterized by small scale, personalization, and high flexibility. Farmers usually broadcast from fields, orchards, or family workshops, showcasing the real growth status and production processes of agricultural products. They attract consumers with an "original ecology" and "down-to-earth" style, making this model suitable for farmers engaged in small-scale planting or breeding. For example, apple growers in Yulin, Shaanxi Province, broadcast the apple picking and sorting process through their Douyin accounts, using "direct supply from our own orchard" as a selling point; their single livestream can achieve sales of 10,000–20,000 yuan. The advantages of this model include low operating costs (no need for professional teams or large capital investment) and flexible decision-making (ability to adjust products and prices according to consumer demand). However, it also has obvious disadvantages: limited agricultural product output, difficulty in standardizing quality, and weak livestreaming skills leading to challenges in traffic acquisition, making large-scale development difficult.

3.1.2. Enterprise-led livestreaming model

Agricultural enterprises (especially regional leading agricultural enterprises) integrate resources to manage the entire process of agricultural product selection, standardized processing, packaging design, and livestream operation, while farmers only need to supply agricultural products in accordance with enterprise standards. Enterprises typically have professional livestream teams (including anchors, operators, and planners) and sound supply chain systems, enabling large-scale and standardized livestream operations. This model is suitable for agricultural products with a single category and large output. For example, the rice brand under Hunan Longping High-Tech Co., Ltd.

integrates multiple rice-planting bases across the country, establishes standardized processing workshops, and operates official livestream rooms on Taobao and JD.com. Anchors focus on "scientific planting" and "quality assurance" as core selling points, achieving single-livestream sales of over 100 million yuan. The advantages of this model include stable product quality, strong brand influence, and well-equipped supply chains, which can quickly open up markets. However, it has low dependence on farmers, resulting in weak bargaining power for farmers and limited room for income growth.

3.1.3. Government-supported livestreaming model

The government promotes collective livestreaming of regional agricultural products by building livestream platforms, organizing livestream training, and providing policy subsidies. Common forms include "county magistrate livestreams," "secretary livestreams," and "regional agricultural product livestream festivals." The government leverages its public credibility to endorse agricultural products, while integrating resources such as logistics, warehousing, and finance to address infrastructure and funding issues in livestream development. This model is suitable for promoting regional characteristic agricultural products. For example, the government of Ganzhou, Jiangxi Province, collaborated with Douyin to host the "Gannan Navel Orange Livestream Festival," organizing over 20 county magistrates and secretaries to participate in livestreaming. It also coordinated with logistics enterprises to reduce express delivery fees and built a navel orange traceability platform; during the event, navel orange sales exceeded 1 billion yuan. The advantages of this model include strong brand credibility, powerful resource integration capabilities, and the ability to rapidly increase agricultural product sales in the short term. However, it is highly dependent on the government; if follow-up operations are insufficient, it is prone to the phenomenon of "short-lived livestreaming," making sustainable development difficult.

3.2. Case analysis

3.2.1. Case 1: Dongfang Zhenxuan's agriculture-assisted livestreaming (enterprise-led model)

Dongfang Zhenxuan, a livestreaming platform under New Oriental, adopts an "enterprise + farmer + supply chain" operation model. First, the Dongfang Zhenxuan team conducts in-depth visits to rural areas across the country to select high-quality agricultural products, and signs procurement agreements with farmers, requiring them to plant in accordance with the quality standards formulated by the enterprise. Second, the enterprise carries out standardized processing and packaging design of agricultural products to create exclusive brands such as "Dongfang Zhenxuan Wuchang Rice." Finally, professional anchors explain the products in livestream rooms, combining situational marketing with the local culture and nutritional value of the agricultural products; at the same time, relying on New Oriental's traffic resources and logistics cooperation system, the enterprise achieves rapid product distribution.

In 2023, the transaction volume of Dongfang Zhenxuan's agriculture-assisted livestreaming reached 8 billion yuan, covering more than 200 rural areas nationwide and driving 50,000 farming households to increase their income, with an average annual income increase of 24,000 yuan per household. Among them, Wuchang rice from Heilongjiang Province achieved annual sales of over 1.5 billion yuan through livestream promotion, an 80% increase compared to before the cooperation; the sales volume of wild mushrooms from Yunnan Province reached 500 million yuan, helping local farmers solve the problem of unsalable products. In addition, Dongfang Zhenxuan has driven the

development of related industries such as rural logistics and packaging, creating 12,000 jobs in cooperative areas.

Dongfang Zhenxuan's success can be attributed to three key factors: first, its emphasis on agricultural product quality control, ensuring stable product quality through the formulation of strict procurement standards and traceability systems; second, its strengthening of content marketing, combining agricultural products with local culture and knowledge popularization to enhance product added value; third, its integration of supply chain resources, establishing long-term cooperation with logistics enterprises to reduce logistics costs and improve distribution efficiency.

3.2.2. Case 2: Danling Citrus Livestreaming in Sichuan Province (government-supported model)

Danling County in Sichuan Province is a well-known citrus-producing area in China. To promote citrus sales, the local government has implemented a series of supportive measures. First, the government collaborated with the Bureau of Agriculture and Rural Affairs to formulate the Danling Citrus Quality Standards, standardizing the citrus planting, harvesting, and sorting processes; it also built a citrus traceability platform, allowing consumers to check information such as the citrus planting base and fertilization records by scanning a QR code. Second, the government partnered with Douyin and Pinduoduo to establish a "Danling Citrus Livestream Zone," organized farmers to participate in livestream training, and cultivated local anchors. Finally, it hosts the "Danling Citrus Livestream Festival" every November, inviting county magistrates and agricultural experts to participate in livestreaming, while providing logistics subsidies and traffic support.

With government support, the transaction volume of Danling citrus livestreaming increased from 300 million yuan in 2020 to 1.8 billion yuan in 2023, with an average annual growth rate of 82%, driving 32,000 farming households in the county to increase their income, with an average annual income increase of 18,000 yuan per household. In addition, the brand awareness of Danling citrus has been significantly enhanced; "Danling Bushi Huo" (Danling late-ripening citrus) and "Danling Chunjian" (Danling spring citrus) have become well-known citrus brands nationwide, with products sold to first-tier cities such as Beijing, Shanghai, and Guangzhou, and even exported to Southeast Asian countries.

This case provides replicable experiences: first, the government takes the lead in formulating quality standards and traceability systems to enhance consumer trust; second, it strengthens the cultivation of livestreaming talents to improve farmers' independent livestreaming capabilities; third, it integrates platform resources, reducing livestreaming thresholds and stimulating farmers' participation enthusiasm by hosting livestream festivals and providing subsidies.

4. Existing problems

Problems on the supply side are mainly reflected in the insufficient standardization of product quality. Currently, only 35% of agricultural products sold via livestreaming have established clear quality grading standards, and the standardization rate of packaging is less than 40%. This leads to uneven product quality and a high consumer complaint rate. According to data from consumer associations, complaints about agricultural product sales via livestreaming increased by 85% year-on-year in 2023, with quality issues accounting for 62%. For fresh agricultural products in particular, the lack of unified standards results in significant differences between batches, seriously affecting the consumer experience. In addition, the traceability system for agricultural products is

incomplete: only 28% of products have realized full-process traceability, which poses great difficulties for quality supervision.

The shortage of talents is particularly prominent. Currently, the gap of professional livestreaming talents in rural areas exceeds 1.2 million, and only 25% of existing employees have received systematic training. Most farmer anchors lack professional livestreaming skills, product knowledge, and marketing capabilities, leading to unsatisfactory livestreaming effects. Surveys show that the average number of online viewers in over 60% of farmers' livestream rooms is less than 50, with a conversion rate of less than 2%. Meanwhile, professional talents in operations, planning, and aftersales services are extremely scarce, seriously restricting the professional development of the industry.

Problems on the operation side are mainly concentrated in traffic acquisition and supply chain construction. Due to the preference of platform algorithms for top anchors, it is difficult for small and medium-sized farmers' livestream rooms to obtain natural traffic. Data shows that the top 1% of anchors occupy 60% of the platform's traffic, while the average number of views of small and medium-sized farmers' livestream rooms is only 1/80 of that of top livestream rooms. This forces many farmers to rely on paid traffic, with promotion costs accounting for 15%–25% of sales revenue, seriously compressing profit margins.

Supply chain shortcomings are also important factors restricting development. The coverage rate of cold chain logistics in rural areas is less than 35%, and the loss rate of fresh products reaches 18%–28%. Warehousing facilities are severely insufficient, with a gap of over 30 million square meters. Especially during promotional events, problems such as logistics backlogs and delayed deliveries occur frequently, seriously affecting the consumer experience. Surveys show that the return rate caused by logistics problems is as high as 12%, far exceeding that of traditional ecommerce platforms.

Problems on the environmental side include inadequate supervision mechanisms and intensified homogeneous competition. Currently, there is no unified supervision standard for the live-streaming sales of agricultural products, and only 40% of live broadcast rooms have established a sound quality control system. Issues such as false promotion, inconsistency between products and descriptions, and evasion of after-sales responsibilities occur from time to time, which seriously damage the industry's reputation. At the same time, the phenomenon of product homogeneity is severe—similar products account for more than 65% of the market—leading to fierce price competition and profit margins generally lower than 12%. All these problems have seriously restricted the healthy development of rural e-commerce live-streaming.

5. Countermeasures and suggestions

5.1. Government level

The government should play a leading role and improve top-level design. First, it is necessary to accelerate the formulation of national standards for agricultural product live-streaming e-commerce, and establish a sound quality grading system and traceability mechanism. It is recommended that by 2025, the standards for live-streaming sales of major agricultural products should be completed, and full-process traceability of key products should be realized. Second, increase investment in infrastructure, focusing on improving rural network conditions and logistics facilities. It is planned to achieve full 5G network coverage in key villages and towns within three years, and increase the coverage rate of cold chain logistics to more than 60%. At the same time, establish a sound talent training system, train no less than 150,000 professional live-streaming talents annually, and guide

more college graduates to return to their hometowns for entrepreneurship. In addition, establish a regional public brand protection mechanism to prevent vicious competition and the spread of counterfeit and shoddy products.

5.2. Enterprise level

Enterprises should play the role of market entities and promote the standardized development of the industry. Leading enterprises should take the lead in establishing industrial alliances, formulate industry standards, and share resources and channels. It is recommended that large-scale agricultural enterprises invest no less than 5% of their sales revenue in technological upgrading and talent training every year. They should accelerate the construction of standardized production bases and modern processing workshops, and improve the quality control system. At the same time, focus on product innovation, develop differentiated products, and avoid homogeneous competition. Furthermore, strengthen supply chain construction, invest in the construction of warehousing and logistics facilities, and introduce advanced supply chain management systems.

5.3. Village-level organization level

Village-level organizations should do a good job in integrating and coordinating local resources. They should establish unified product quality standards and production specifications, and organize scattered farmers to implement unified standards, unified packaging, and unified live-streaming sales. They should deeply explore local characteristic resources, develop products with local characteristics, and build characteristic brands of the "One Village, One Product" model. Establish a farmer mutual assistance mechanism to share live-streaming equipment and experience, and reduce operating costs. In addition, establish a product quality supervision mechanism to ensure stable and reliable product quality.

5.4. Farmer level

Farmers should take the initiative to improve their own capabilities. They should actively participate in various training courses to learn live-streaming skills and marketing knowledge. Focus on improving product quality and strictly follow standards for production and management. Establish the concept of honest operation and build long-term and stable customer relationships. It is recommended to join cooperatives or industrial alliances to enhance market competitiveness with the strength of collectives. Pay attention to innovation and develop live-streaming content and product features with personal characteristics.

5.5. Industry association level

Industry associations should play the role of a bridge and link. They should formulate industry norms, establish an integrity system, and maintain market order. Organize exchange activities to promote successful experiences and improve the overall level of the industry. Establish a complaint handling mechanism to promptly resolve consumer disputes and maintain the industry's reputation. In addition, strengthen communication with government departments, reflect industry demands, and strive for policy support.

6. Conclusions

Through research on the e-commerce live-streaming boosting rural economic development under the background of rural revitalization, this study draws the following conclusions: First, as an important carrier for the integration of the digital economy and the rural economy, e-commerce live-streaming plays a key role in reducing the circulation costs of agricultural products, strengthening regional brand awareness, and promoting employment and income growth in rural areas. In 2023, the transaction scale of China's rural e-commerce live-streaming exceeded 500 billion yuan, driving more than 2 million farming households to increase their income, which fully proves that it has become a new engine for promoting rural economic development. Second, at present, rural e-commerce live-streaming has formed three typical models: farmer-led, enterprise-led, and government-supported. Each model has its own advantages and disadvantages, and the suitable model should be selected according to regional resource endowments and the needs of participating entities— the farmer-led model is suitable for small-scale operations, the enterprise-led model for large-scale agricultural products, and the government-supported model for the promotion of regional brands.

However, the research also finds that the current development still faces many challenges. The lack of standardization leads to unstable product quality; the shortage of talents restricts professional development; difficulties in traffic acquisition affect sales performance; supply chain shortcomings limit user experience; insufficient supervision damages the industry's reputation; and homogeneous competition compresses profit margins. All these problems require systematic solutions.

Therefore, it is necessary to establish a multi-level and multi-stakeholder collaborative development system. The government should do a good job in top-level design and policy guidance; enterprises should play the role of market entities; village-level organizations should integrate resources; farmers should improve their own capabilities; and industry associations should play a coordinating role. Only through the joint efforts of all parties can the healthy development of rural ecommerce live-streaming be promoted.

The main contribution of this study lies in constructing a systematic analytical framework for the development of rural e-commerce live-streaming, proposing hierarchical and stakeholder-specific solutions, and providing a theoretical basis for the formulation of relevant policies. The research results have important reference value for guiding practical work and promoting the in-depth integration of e-commerce live-streaming and rural revitalization.

It is suggested that future research should focus on the following aspects: First, the evaluation of the application effects of new technologies, studying the impact mechanism of digital technologies on e-commerce live-streaming; second, the comparison of development models in different regions, exploring development paths suitable for different areas; third, the tracking of long-term benefits, evaluating the long-term impact of e-commerce live-streaming on rural economic development; fourth, the evaluation of policy effects, studying the specific effects of various support policies. Through these studies, continuous theoretical support will be provided for the innovative development of rural e-commerce live-streaming, and ultimately realize the goal of e-commerce live-streaming empowering the modernization of agriculture and rural areas, and promoting farmers' income growth, agricultural efficiency improvement, and rural development.

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