

Research on Competitive Strategies of Agricultural Product Live-streaming E-commerce Enterprises in the Digital Intelligence Era

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Abstract

In the digital and intelligent era, live-streaming e-commerce for agricultural products has become an important carrier for the digital transformation of agriculture. The industry is experiencing rapid expansion, but enterprises are facing development challenges such as intensified competition, homogenization of models, and imperfect supply chains. This paper takes live-streaming e-commerce enterprises for agricultural products as the research object, utilizes the PEST model and Porter's Five Forces model, analyzes the competitive environment of enterprises from both macro and micro dimensions, and combines the current development status of the industry to sort out the core issues in digital and intelligent transformation. Finally, it proposes a three-in-one competitive strategy of "digital and intelligent + scenario-based + branding" and an ecological collaborative implementation path. The research results can provide practical references for live-streaming e-commerce enterprises for agricultural products to break through development bottlenecks and enhance their core competitiveness. At the same time, it helps standardize and digitize the industry, promoting the deep integration of rural revitalization and the digital economy.

Keywords

Digital Intelligence Era, Live-streaming E-commerce for Agricultural Products, Competitive Strategy, PEST Model, Porter's Five Forces Model.

1. Introduction

As a major agricultural country, China's agricultural product circulation efficiency directly affects agricultural industry upgrading and farmers' income increase. With the deep integration of the digital economy and Internet technology, live-streaming e-commerce, characterized by strong interaction, high conversion, and low threshold, has become an important channel for the upward circulation of agricultural products [1]. In 2023, China's live-streaming e-commerce penetration rate reached 37.8%, and the scale of live-streaming e-commerce users for agricultural products exceeded 200 million. However, while the industry is developing rapidly, the surge in the number of enterprises has led to intensified homogenization competition. Most small and medium-sized enterprises (SMEs) face issues such as shallow application of digital and intelligent technologies, weak brand awareness, and an unsound supply chain system, falling into the development dilemma of "difficulty in obtaining traffic and meager profits" [2]. The iteration of digital and intelligent technology provides new opportunities for agricultural product live-streaming e-commerce enterprises to break through development bottlenecks. The application of technologies such as big data, artificial intelligence, and blockchain drives the industry's transformation from "traffic-driven" to "value-driven". Against this backdrop, this paper combines classic strategic analysis models to systematically analyze the competitive environment and core issues of agricultural product live-streaming e-commerce enterprises in

the digital and intelligent era, and constructs targeted competitive strategies, which are both theoretically supplementary and practically instructive. This paper adopts literature research, model analysis, and case analysis methods to sort out the current research status and industry policy trends at home and abroad, laying a theoretical and practical foundation for strategy construction [3].

2. Relevant Theories and Current Industry Development Status

2.1. Core Theoretical Basis

Porter's Competitive Strategy Theory: Consisting of three fundamental strategies: cost leadership, differentiation, and focus, the Porter Five Forces model provides a systematic framework for analyzing industry competition patterns from five dimensions: existing enterprise competition, potential entrant threats, substitute threats, and bargaining power of suppliers and buyers. It serves as the core theoretical basis for formulating corporate competitive strategies.

PEST analysis model: Analyze the macro development environment of enterprises from four dimensions: politics, economy, society, and technology, identify the policy dividends, market foundation, social demand, and technical support for industry development, and provide macro guidance for strategy formulation [4].

Digitalization and Intelligentization Empowerment Theory: This theory emphasizes the role of digital intelligent technologies such as big data and artificial intelligence in optimizing processes, enhancing efficiency, and innovating models for traditional industries. It serves as the core theoretical support for enterprises to achieve differentiated competition in the digital and intelligent era.

2.2. Current Development Status and Policy Environment of the Industry

The domestic agricultural product live-streaming e-commerce industry is characterized by "rapid development and favorable policies". Policies such as the "14th Five-Year Plan for Promoting Agricultural and Rural Modernization" and the "Opinions on Comprehensively Promoting Key Work for Rural Revitalization in 2023" explicitly propose expanding the coverage of e-commerce in rural areas, building live-streaming e-commerce bases for agricultural and sideline products, and cultivating live-streaming e-commerce talents, providing policy support for the industry's development. At the same time, the industry's operation mode continues to innovate, forming typical models such as "farmer + anchor + platform" and "e-commerce enterprise + base + farmer". Regional agricultural products such as apples from Luochuan, Shaanxi, and vegetables from Shouguang, Shandong, have achieved branding and large-scale sales through live-streaming e-commerce [5].

However, there are still significant shortcomings in the industry's development: there is a shortage of compound talents in rural areas who possess both agricultural knowledge and proficiency in live streaming operations, and over 60% of small and medium-sized enterprises (SMEs) lack the ability to apply digital and intelligent technologies; the standardization level of agricultural product supply chains is low, the coverage rate of cold chain logistics is less than 40%, and the transportation loss rate remains high; the industry suffers from serious brand homogenization, with over 70% of enterprises mainly selling primary agricultural products and lacking in the creation of distinctive brands and the enhancement of product added value.

3. Analysis of the Competitive Environment for Agricultural Product Live Streaming E-Commerce Enterprises in the Digital and Intelligent Era

3.1. Macro-environment Analysis based on the PEST Model

Political Environment: At the national level, policy support for rural revitalization and agricultural digitization continues to increase. The standards for live streaming e-commerce are gradually being improved, and agricultural cooperation among member countries under the RCEP framework is strengthening, providing international market space for cross-border live streaming e-commerce of agricultural products. The overall policy environment is favorable.

Economic Environment: The scale of China's digital economy continues to expand, and residents have formed online consumption habits. In 2023, rural online retail sales reached 2.17 trillion yuan, providing a solid market foundation for live-streaming e-commerce of agricultural products. However, traffic costs have been rising year by year, consumers are becoming more rational in their spending, and corporate profit margins have been further compressed.

Social Environment: Consumers' demands for the quality, safety, and uniqueness of agricultural products are constantly increasing. Personalized and diversified consumption needs are driving the industry to shift from "low-price competition" to "quality competition". The rural Internet penetration rate has exceeded 60%, providing basic conditions for the development of live-streaming e-commerce for agricultural products.

Technical Environment: The application of technologies such as big data, artificial intelligence, blockchain, and 5G is continuously deepening, enabling functions like precise user profiling, agricultural product traceability, and immersive live streaming. The technical capabilities of live streaming platforms are continually being enhanced, providing technical support for enterprises' digital and intelligent transformation [6].

3.2. Analysis of the Micro-competitive Environment based on Porter's Five Forces Model

Existing competition among enterprises: Due to the low barriers to entry in the industry, the proliferation of enterprises has led to intense competition. Top streamers and platforms account for over 70% of traffic resources, while small and medium-sized enterprises (SMEs) often adopt a homogenized model of "low-price promotion", lacking core competitiveness.

Potential entrant threat: Policy dividends and market potential attract traditional agricultural product enterprises, e-commerce platforms, internet celebrity teams, etc. to enter the market. Potential entrants will further divert traffic and market share, but the improvement of industry norms and the increase in digital and intelligent technology requirements are gradually raising the entry threshold.

Substitution threat: Traditional offline sales, traditional e-commerce stores, community group buying, and other models pose a substitution threat. However, agricultural product live-streaming e-commerce, with its contextualized and high-trust feature of "direct connection from the production site to consumers", forms a differentiated competitive advantage, and the substitution threat is relatively limited.

Supplier bargaining power: Agricultural production is dominated by small-scale farming, with a large and dispersed number of suppliers, resulting in a relatively weak overall bargaining power. However, suppliers of specialty and scarce agricultural products, as well as seasonal agricultural products, have relatively higher bargaining power.

Buyer bargaining power: With a large number of consumers and a wide range of choices, coupled with high sensitivity to price and quality, the convenience of online consumption

enhances buyers' bargaining power. Enterprises need to ensure quality while optimizing prices and services.

4. Core issues for the Development of agricultural Product Live Streaming E-Commerce Enterprises in the Digital and Intelligent Era

4.1. Insufficient Depth of Application of Digital and Intelligent Technologies

Most small and medium-sized enterprises (SMEs) and micro, small and medium-sized enterprises (MSMEs) only apply digital and intelligent technologies at the superficial level of "live streaming for product promotion", without fully utilizing big data for precision marketing and user operations. They lack the application of artificial intelligence and blockchain technologies in supply chains and product traceability. Enterprises invest little in technological research and development, suffer from a shortage of professional digital and intelligent technology talents, and fail to fully leverage the core role of technology empowerment.

4.2. Brand Building Lags Behind and the Model is Homogenized

Most enterprises in the industry lack brand awareness, mainly focusing on the sale of primary agricultural products without brand positioning, image design, and value enhancement, resulting in severe product homogeneity. Their operation modes are highly similar, relying heavily on "live streaming sales + flash sales at low prices", lacking differentiated competitive strategies, and trapped in low-level price wars.

4.3. Imperfect Supply Chain System

The characteristics of agricultural products, such as perishability, vulnerability, and strong seasonality, impose high demands on the supply chain. However, the current industry supply chain suffers from low standardization, outdated warehousing and logistics facilities, insufficient cold chain logistics coverage, and high transportation loss rates. The lack of a long-term mechanism for cooperation between enterprises, farmers, and production bases makes it difficult to guarantee the stability and quality of product supply.

4.4. Shortage of Composite Talents

E-commerce live streaming for agricultural products requires compound talents who possess agricultural knowledge, live streaming operation capabilities, and digital and intelligent technology application skills. However, there is a severe shortage of such talents in rural areas. The existing employees of enterprises lack professional competence, resulting in low-quality live streaming content and poor operational efficiency, making it difficult to adapt to the demands of digital and intelligent development.

5. Building Competitive Strategies for Agricultural Product Live-streaming E-commerce Enterprises in the Digital Intelligence Era

Based on the analysis of the competitive environment and the identification of core issues, combined with the technological characteristics of the digital and intelligent era, this article proposes a three-in-one competitive strategy of "digitalization + intelligentization + branding", and simultaneously constructs an implementation ecosystem for multi-party collaboration, aiming to help enterprises enhance their core competitiveness and achieve sustainable development.

5.1. Digitalization and Intelligentization Empowerment Strategy: Building Technology-Driven Core Competitiveness

Empowering Precision Marketing: Leverage big data to collect user consumption data, build precise user personas, and achieve personalized creation of live broadcast content, precise product recommendations, and efficient traffic conversion. Optimize live broadcast operation strategies through data analysis to enhance live broadcast exposure and conversion rates.

Supply chain digitalization and intelligent optimization: Utilize artificial intelligence to predict agricultural product demand and guide standardized and large-scale production; rely on blockchain technology to establish a full-process traceability system for agricultural products, enhancing product credibility; strengthen the digitalization and intelligent transformation of warehousing and logistics, increase the coverage of cold chain logistics, and reduce transportation losses.

Digital and intelligent enhancement of operational efficiency: Introduce intelligent customer service and intelligent editing systems to reduce the cost of live streaming operations and after-sales service; achieve digitalization of internal enterprise management, optimize operational processes, and enhance management efficiency.

5.2. Scenario-based Reconstruction Strategy: Achieving Differentiated Live Streaming Experience

Create immersive scenes in production areas: Breaking through the limitations of traditional live streaming rooms, we conduct immersive live streaming in planting bases and production sites, intuitively showcasing the growth environment and processing techniques of agricultural products, thereby enhancing consumer trust. By combining local characteristics, we create live streaming scenes that convey the regional cultural value of agricultural products.

Personalized scene customization: Based on user personas, we create diversified live streaming scenarios, such as fresh food home delivery, online celebrity agricultural product check-ins, and high-end gift customization, to meet the personalized needs of different consumers and enhance user experience.

Interactive scene building: Enhance live streaming interactivity through methods such as lottery draws, Q&A sessions, and group calls, build a live streaming community to achieve refined fan management, and increase user engagement and repeat purchase rates.

5.3. Brand Upgrade Strategy: Achieving the Transformation from Traffic to Brand

Build distinctive agricultural product brands: Exploit the regional, quality, and cultural characteristics of agricultural products, conduct precise brand positioning and image design, and create distinctive brands with recognizability; promote the brands through channels such as live streaming, short videos, and social media to enhance brand awareness.

Enhance product added value: moving away from low-price competition, strengthening deep processing and refined packaging of agricultural products, developing derivative products such as ready-to-eat meals and agricultural product gift boxes; establishing a strict product quality inspection mechanism to support brand development with quality.

Establish a brand trust system: Enhancing brand credibility through blockchain traceability and third-party quality certification; improving the after-sales service system, promptly addressing consumer demands, and enhancing brand satisfaction and reputation.

5.4. Ecological Synergy Strategy: Ensuring the Implementation of the Strategy

Enterprise-farmer collaboration: Enterprises establish a long-term cooperation mechanism of "contract farming" with farmers and production bases, providing technical guidance and

training, achieving standardized production of agricultural products, and ensuring product supply stability and quality.

Enterprise-platform collaboration: Strengthen cooperation with live streaming platforms such as Tiktok, Kwai, and video accounts, fully utilize platform traffic resources and technical support, participate in platform-specific agricultural product events, and enhance brand exposure.

Collaboration among government, enterprises, and universities: Jointly establish a talent cultivation system with the government, universities, and enterprises. The government introduces preferential policies for talents, universities offer courses related to live streaming e-commerce for agricultural products, and enterprises provide practice bases to jointly cultivate composite professional talents.

6. Conclusion

The digital and intelligent era has brought multiple opportunities in policy, technology, and market to the live-streaming e-commerce industry for agricultural products, while also exposing enterprises to a more complex competitive environment. This article draws the following conclusions through research: Firstly, the macro development environment for live-streaming e-commerce enterprises of agricultural products is favorable, but micro-level competition is intensifying. The application of digital and intelligent technology, brand building, and supply chain optimization have become the core competitive strengths of enterprises. Secondly, at the current stage of the industry, there are core issues such as shallow application of digital and intelligent technology, brand homogenization, imperfect supply chains, and a shortage of composite talents, which restrict the sustainable development of enterprises. Thirdly, building a three-in-one competitive strategy of "digitalization + scenario-based + branding", supplemented by the ecological synergy of enterprises and farmers, enterprises and platforms, and government, enterprises, and schools, can effectively help enterprises break through development bottlenecks and achieve a transformation from "traffic-driven" to "value-driven".

Digitalization and intelligence are the core driving forces for enterprises to enhance their core competitiveness, scenario-based approach is the key path to achieve differentiated competition, branding is the fundamental guarantee for sustainable development, and a multi-party collaborative industrial ecosystem is an important support for strategy implementation. In the future, live-streaming e-commerce enterprises for agricultural products should increase investment in digital and intelligent technologies, deepen brand building, optimize the supply chain system, and strengthen multi-party cooperation to jointly promote the industry towards standardization, digitalization, and branding, injecting new momentum into the integrated development of rural revitalization and the digital economy.

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