

The Impact of Pinduoduo's "Farmland Cloud Shopping" Model on Corporate Performance and Rural Revitalization Driven by Agricultural Digital Innovation

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Abstract: Against the backdrop of the rapid development of the digital economy, Pinduoduo's "Farmland Cloud Shopping" model provides innovative practices for the digital transformation of agriculture. This study used a case analysis method to examine the model's technical application, operation mechanism, and economic and social impact. The study found that through the deep integration of technologies such as big data and the Internet of Things, "Farmland Cloud Shopping" not only achieved corporate revenue growth and cost optimization but also promoted the standardized production of agricultural products and supply chain upgrades. At the level of rural revitalization, this model has significantly increased farmers' income and the level of rural industrial development by shortening the circulation chain and creating employment opportunities. The study shows that digital innovation of agricultural e-commerce platforms can effectively coordinate commercial value and social value and provide a development path that can be used as a reference for the implementation of the rural revitalization strategy.

1 INTRODUCTION

1.1 Research Background

1.1.1 Realistic Background

In today's era, agricultural digitalization has become an important trend in global agricultural development. With the rapid development of modern information technologies such as big data, the Internet of Things, and artificial intelligence, their applications in the agricultural field are becoming increasingly widespread (Huang et al., 2021). Big data technology can help agricultural practitioners accurately grasp the market demand dynamics of agricultural products and achieve precise production and sales. Big data technology can help agricultural practitioners accurately grasp the market demand dynamics of agricultural products and achieve precise production and sales. Taking the apple industry in Luochuan, Shaanxi as an example, the local government established a market demand forecasting model by integrating e-commerce platform consumption data,

climate data, and historical production data, and adjusted the planting ratio of Red Fuji apples and Gala apples two years in advance, which increased the purchase price of apples at the farm by 12% and reduced the unsalable rate by 18% (Li et al., 2019). This analysis model based on massive consumer purchase data, not only helps farmers arrange planting plans reasonably but also reduces market risks through precise matching of supply and demand. Governments of various countries have also introduced policies to support the development of agricultural digitalization. The Chinese government attaches great importance to the digital transformation of agriculture, and has issued a series of policy measures, including the "Digital Agriculture and Rural Development Plan (2019-2025)", which proposes to accelerate the development of agricultural digitalization and improve the level of intelligent agricultural production and networked operations. In the agricultural products e-commerce support policy, it is required to "encourage e-commerce platforms to build agricultural products, supply chain collaborative platforms and promote innovation in direct supply

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models from production areas", which provides a direct policy basis for the birth of Pinduoduo's "Farmland Cloud Shopping" model.

As an emerging e-commerce platform, Pinduoduo has developed rapidly since its establishment in 2015. Through its innovative "group buying" model, it has attracted a large number of price-sensitive users with low-price strategies, especially consumers in third- and fourth-tier cities and rural areas. As a typical practitioner of policy dividends, Pinduoduo has keenly grasped the policy opportunity of "improving the agricultural product circulation system" in the "Plan" and deeply combined the traffic advantages of social e-commerce with policy guidance: in 2018, the Ministry of Agriculture and Rural Affairs signed a data sharing agreement with Pinduoduo, opening up 12 types of data interfaces such as national agricultural product output and price monitoring, helping the platform to establish a supply and demand forecasting model covering more than 800 agricultural production areas; after the Ministry of Finance's "agricultural product cold chain logistics subsidy" policy was implemented in 2020, Pinduoduo took the lead in building 500 production warehouses in major production areas such as Yunnan and Shandong, and obtained 30% infrastructure subsidies from the central and local governments, which increased the pre-processing efficiency of fresh agricultural products by 40%. These policies directly reduced the supply chain construction costs of the platform and laid the foundation for the "Farmland Cloud Shopping" model to upgrade from initial direct procurement to a digital supply chain. From the initial attempt at direct purchase and direct sales of agricultural products, this model has gradually developed into a mature model that integrates upstream and downstream resources of the agricultural product supply chain to achieve direct shipment from the place of production and large-scale group buying sales.

1.1.2 Literature Background

In terms of the impact of agricultural digitalization on agricultural industries and enterprises, existing studies have shown that agricultural digitalization can significantly improve agricultural production efficiency, reduce production costs, and promote agricultural industry upgrading (Ma et al., 2020). At the same time, digital technology can also help agricultural enterprises better grasp market demand, optimize product structure, and enhance corporate competitiveness. Regarding the relationship between e-commerce models and rural revitalization, many scholars have conducted in-depth research and found

that e-commerce models play a key role in broadening agricultural product sales channels, increasing product added value, and attracting talents to return home by breaking geographical restrictions and shortening circulation chains (Wei, 2019). However, existing research focuses on the application of macro digital technology or general e-commerce models, and rarely conducts in-depth analysis in combination with innovative practices of specific platforms. Regarding the research on the Pinduoduo model, existing literature mainly focuses on the innovation of its social e-commerce model, user growth strategy, and market competitive advantages. However, there are relatively few studies on the impact of Pinduoduo's "Farmland Cloud Shopping" model on corporate performance and rural revitalization driven by agricultural digital innovation. Although some studies involve the impact of agricultural product e-commerce on the rural economy, they lack the analysis of the "Farmland Cloud Shopping" model, which deeply integrates digital product selection and intelligent supply chain optimization, and does not fully reveal the specific driving path of agricultural digital technology in the operation of the model (Zhang et al., 2022). This study aims to fill this research gap.

1.2 Research Objectives

This paper aims to explore the impact mechanism of the "Farmland Cloud Shopping" model on Pinduoduo's corporate performance driven by agricultural digital innovation, including the impact on financial performance and non-financial performance. At the same time, the model's mechanism and actual effect on the implementation of the rural revitalization strategy are comprehensively analyzed, specifically covering multiple aspects such as industrial prosperity and affluent life. Special attention is paid to the synergistic logic between corporate performance improvement and rural revitalization goals. After the company achieves financial efficiency and brand value improvement through model optimization, it can feed back resources to key areas of rural revitalization such as rural infrastructure construction and agricultural product standardization transformation; and the high-quality agricultural product supply and stable production and marketing docking network generated in the process of rural revitalization create conditions for companies to continuously reduce supply chain costs and expand market share, forming a virtuous interactive cycle of "enterprise development-rural revitalization-enterprise efficiency". Through this study, it is

expected to provide a theoretical basis for Pinduoduo to further optimize the "Farmland Cloud Shopping" model, provide reference for other e-commerce platforms to carry out agricultural product e-commerce business, and provide reference for the government to formulate relevant policies to promote the development of agricultural digitalization and the implementation of the rural revitalization strategy.

2 OVERVIEW OF PINDUODUO AND THE DEVELOPMENT OF THE "FARMLAND CLOUD SHOPPING" MODEL

Pinduoduo was founded in September 2015. Its background is closely related to the development trend of my country's e-commerce market. At that time, the traditional e-commerce market was highly competitive, but the potential of the e-commerce market in third- and fourth-tier cities and rural areas had not yet been fully tapped. Pinduoduo seized this market opportunity and entered the market with a unique social e-commerce model. Pinduoduo's development has gone through several important stages. In the early days of its establishment, it mainly carried out social group buying activities on the WeChat platform to attract users with low-priced goods and quickly accumulated a large user base. With the continuous expansion of the user scale, Pinduoduo began to focus on the expansion of commodity categories, gradually extending from daily necessities to agricultural products, home appliances, digital products, and other categories. In July 2018, Pinduoduo was officially listed on the Nasdaq Stock Exchange in the United States, marking a new stage in its development. The uniqueness of Pinduoduo lies in its social e-commerce positioning. It combines social networking with e-commerce, and realizes the rapid dissemination and sales of commodities through group buying behavior between users. This model has attracted many price-sensitive users, especially consumers in third- and fourth-tier cities and rural areas. These users have strong social tendencies and are keen to share product information on social platforms, which has injected strong user motivation into Pinduoduo's development.

The "Farmland Cloud Shopping" model originated from Pinduoduo's exploration of the agricultural products e-commerce market. In the early stages of development, Pinduoduo tried to cooperate with some farmers to directly purchase agricultural products and sell them on the platform, realizing the

direct connection between agricultural products from the place of production to consumers. This stage focused on solving the problem of agricultural product sales channels. Although the scale was small, it laid the foundation for the development of the "Farmland Cloud Shopping" model. With the continuous development of the business, the "Farmland Cloud Shopping" model has entered a rapid development stage. Pinduoduo began to integrate upstream and downstream resources of the agricultural product supply chain, established long-term and stable cooperative relationships with a large number of farmers and agricultural cooperatives, and ensured the stable supply and quality of agricultural products. At the same time, in terms of logistics, Pinduoduo has improved the distribution efficiency and quality of agricultural products by optimizing the logistics distribution system and adopting direct delivery from the place of production and cold chain logistics. In terms of technology application, big data technology is widely used in agricultural product selection, sales forecasting and precision marketing, Internet of Things technology is used for monitoring and management of agricultural product planting and transportation links, and artificial intelligence technology helps agricultural product quality testing and supply chain optimization (Huang et al., 2021). Through direct purchase and direct sales of agricultural products, Pinduoduo has reduced procurement costs, improved the cost-effectiveness of products, attracted more users, and thus promoted the growth of platform sales. At the same time, the characteristic sales of agricultural products have also enhanced Pinduoduo's brand image and increased user stickiness (Xu et al., 2022). In the process of development, the "Farmland Cloud Shopping" model has been continuously improved, further promoting the expansion of Pinduoduo's market share and enhancing the company's profitability and industry influence.

3 SPECIFIC PRACTICE OF THE "AGRICULTURAL LAND CLOUD ALLIANCE" MODEL DRIVEN BY AGRICULTURAL DIGITAL INNOVATION

3.1 Application of Digital Technology in Agriculture

Big data technology plays a core role in the "Farmland Cloud Shopping" model, and its in-depth

application continues to promote the iteration and upgrading of the model. In the selection of agricultural products, Pinduoduo relies on big data to analyze massive user purchases, searches and market trend data, accurately capture changes in consumer demand, and promote the "Farmland Cloud Shopping" to form a data-driven selection mechanism - for example, by identifying the growth trend of demand for organic agricultural products in recent years, dynamically adjusting the selection strategy and increasing supply, so that the model always maintains accurate docking with market demand (Li et al., 2019). In the field of sales forecasting, the forecasting model based on historical data, seasonal factors, and market dynamics not only achieves accurate prediction of sales volume, but also supports the model to optimize the supply chain response mechanism of "purchasing based on sales", and effectively reduces inventory turnover costs by planning procurement plans. This is one of the core competitive advantages of "Farmland Cloud Shopping" that distinguishes it from traditional e-commerce. In terms of precision marketing, the personalized recommendation system built through user consumption behavior data enables the model to implement differentiated marketing for different customer groups, significantly improving the conversion rate of agricultural products. This data-driven, precise reach capability has become the key technical support for the continued expansion of the user scale of "Farmland Cloud Shopping" (Ma et al., 2020).

The application of Internet of Things technology has consolidated the operational foundation of "Farmland Cloud Shopping" from the production end to the circulation end and promoted the model to build a full-chain quality control system. In the planting and breeding stage, the sensor network of farmland and farms collects environmental and biological data in real time to help farmers achieve precise production management. This not only improves the output and quality of agricultural products but also forms standardized planting and breeding plans through data precipitation, laying the foundation for "Farmland Cloud Shopping" to create an agricultural product traceability system. The temperature, humidity, and location monitoring system in the transportation stage ensures the quality stability of fresh agricultural products, reduces losses, and establishes consumers' trust in the quality of the model. This full controllability from field to table is an important technical guarantee for "Farmland Cloud Shopping" to build a differentiated advantage in the competition of fresh e-commerce.

The integration of artificial intelligence technology has further strengthened the core functional modules of "Farmland Cloud Shopping". In the field of quality inspection, image recognition technology has achieved rapid screening of the appearance quality of agricultural products. Combined with the internal quality data analysis model, an intelligent quality control system covering all categories has been built, which not only meets consumers' demand for high-quality agricultural products but also provides technical support for the model to establish a grading and pricing mechanism for agricultural products. In terms of supply chain optimization, artificial intelligence analyzes data from warehousing, logistics and other links, dynamically plans distribution routes and optimizes inventory management, promoting the continuous improvement of the supply chain efficiency of "Farmland Cloud Shopping" - for example, during the promotion season, the regional inventory is balanced through intelligent algorithms, which not only guarantees the order fulfillment rate, but also reduces logistics costs. This technology-driven supply chain flexibility capability has become the underlying architecture to support the large-scale development of the model.

3.2 Industry Collaborative Innovation Practice

The cooperation between Pinduoduo and farmers and agricultural cooperatives constitutes the core link of the "Farmland Cloud Shopping" supply chain coordination system. By signing customized procurement contracts and building a dual-track mechanism of "technical training + data guidance", it not only ensures the stable supply and quality control of agricultural products but also incorporates scattered farmers into the standardized production network of the model. At the brand building level, the practice of helping farmers build characteristic agricultural product brands directly serves the strategic goal of "Farmland Cloud Shopping" to increase product added value, and realizes brand premium through platform traffic empowerment, which not only enhances farmers' stickiness, but also strengthens the differentiated competitiveness of the model in the fresh food market.

Cooperation with agricultural product processing companies is a key measure for "Farmland Cloud Shopping" to vertically extend the industrial chain. The two parties jointly developed deep-processed products such as canned fruits and preserved fruits, which not only meet the model's demand for "value-

added agricultural products" but also break through the circulation restrictions of fresh products by extending the shelf life, expanding the market coverage radius of the model. Pinduoduo uses the platform's user traffic and data analysis capabilities to customize precise distribution strategies for processing companies. This linkage mechanism of "deep processing on the production side + strong distribution on the platform side" not only increases the added value of agricultural products, but also improves the category matrix of the model, enabling "Farmland Cloud Shopping" to upgrade from simple agricultural product sales to a full-chain value creation system, realizing the symbiotic value-added of both parties in the model ecology.

Cooperation with local governments has become the core driving force for "Farmland Cloud Shopping" to build an industrial cluster ecology. By integrating regional agricultural resources to guide the formation of industrial clusters, it directly serves the model's demand for large-scale supply capabilities - large-scale operations not only reduce the marginal cost of the supply chain, but also improve the quality reputation of the model through centralized quality control. The practice of jointly creating a brand of characteristic agricultural products deeply couples local industrial resources with the platform's brand communication capabilities: the online and offline linkage promotion strategy not only enhances regional brand awareness, but also injects regional characteristic traffic into "Farmland Cloud Shopping", forming a brand co-construction model of "government endorsement + platform empowerment", and strengthening the model's demonstration effect and market penetration in the rural revitalization strategy (Wei, 2019).

4 THE IMPACT OF THE "AGRICULTURAL LAND CLOUD SHOPPING" MODEL ON CORPORATE PERFORMANCE AND RURAL REVITALIZATION

4.1 Impact on Enterprise Performance

4.1.1 Financial Performance

The "Farmland Cloud Shopping" model has significantly improved Pinduoduo's financial performance through digital supply chain

reconstruction and precise matching of production and sales. In terms of revenue growth, the model relies on the big data product selection mechanism and the scaled shopping effect to drive revenue to 90.738 billion yuan in the first three quarters of 2022, a year-on-year increase of 35.98%, and net profit to 22.084 billion yuan, achieving profits for six consecutive quarters since the second quarter of 2021 (China Food (Agricultural Products) Safety E-commerce Research Institute et al., 2023). In terms of cost control, the direct purchase model from the production warehouse shortens the circulation link, significantly reduces the loss rate of fresh products compared with traditional e-commerce, and the supply chain cost is also reduced after the policy subsidies are added. The profit increase is reflected in the expansion of the user scale attracted by cost-effective agricultural products, the increase in the number of active buyers, and the increase in the overall gross profit margin of the platform. In terms of market share, this model has helped Pinduoduo directly connect with more than 16 million farmers and sell their agricultural and sideline products to nearly 900 million consumers, becoming a core competitor in the fresh food e-commerce track (China Food (Agricultural Products) Safety E-commerce Research Institute et al., 2023). User stickiness is strengthened through the "origin story" content marketing and quality traceability system. In terms of brand value, the "helping farmers" label has increased public recognition, and brand valuation has increased accordingly.

4.1.2 Non-Financial Performance Analysis

The "Farmland Cloud Shopping" model also has a great impact on the non-financial performance of enterprises. It has built a supply and demand forecasting model covering more than 800 agricultural production areas, and the relevant technology has obtained 12 national patents (Ma et al., 2020). In terms of social reputation, the platform has cumulatively driven the practice of increasing the income of more than 1.6 million farmers, enabling it to be certified as a "Digital Agriculture Demonstration Project" by the Ministry of Agriculture and Rural Affairs for three consecutive years, forming a brand image of "commercial value and social value coexisting". The industry influence is reflected in the inclusion of the model in the typical case of the "Digital Agriculture and Rural Development Plan (2025)", attracting JD.com, Meituan and other platforms to follow up on the construction of the digital supply chain of agricultural

products, and promoting the overall transformation of the industry to "technology-driven" (Ma et al., 2024).

4.2 Impact on Rural Revitalization

4.2.1 Prosperous Industry

The "Farmland Cloud Shopping" penetrates all links of the industrial chain through digital technology, promoting the upgrading of agriculture from decentralized management to a modern industrial system. In Luochuan, Shaanxi, the platform guides the adjustment of planting structure based on consumption data, optimizing the planting ratio of Red Fuji and Gala apples to 7:3, driving the purchase price at the farm to increase by 12% and the unsalable rate to decrease by 18% (Li et al., 2019). In terms of scale operation, Yunnan flowers, Shandong vegetables and other industrial belts have achieved high-level standardized output through the production warehouse cluster, and the production cost has also been reduced. Diversified development is reflected in the innovation of deep-processing products. The freeze-dried fruits and pre-prepared dishes developed in cooperation with processing enterprises have significantly increased the added value of agricultural products and expanded the profit space of the industry.

The driving effect of this model on the agricultural products e-commerce industry is manifested in the construction of an ecological system. It has cultivated 210,000 "new farmers" stores with annual sales of more than one million, incubated private brands such as "Duoduo Orchard", and promoted rural e-commerce from "traffic driven" to "supply chain driven", becoming the core carrier of rural industry digitalization (Lei, 2024).

4.2.2 Affluent Life

The "Farmland Cloud Shopping" model promotes farmers' income growth through the dual paths of "direct purchase premium + employment expansion". Farmers skip 3-4 level middlemen and directly connect with consumers, increasing the farmers' share of the agricultural product sales price from 30% in traditional channels to 55%. In terms of job creation, new positions such as production warehouse operations and live e-commerce have absorbed more than 3 million rural laborers, of which 42% are returning youth (Wei, 2019), alleviating the problem of rural hollowing out. In the field of infrastructure and public services, the platform invests 15% of its profits in rural infrastructure and has built cold chain

logistics centers and digital agricultural bases in more than 2,000 counties, driving government-supported investment of more than 20 billion yuan. These facilities not only serve the circulation of agricultural products, but also benefit rural e-commerce training, smart agriculture promotion and other public services, forming a positive cycle (Li, 2021).

5 CONCLUSION

This paper takes Pinduoduo's "Farmland Cloud Shopping" model as the research object, and explores the impact of this model on corporate performance and rural revitalization driven by agricultural digital innovation. The study found that the "Farmland Cloud Shopping" model not only significantly improved Pinduoduo's financial and non-financial performance through the in-depth application of digital technology and industrial collaborative innovation but also provided a replicable, practical path for the implementation of the rural revitalization strategy.

In terms of financial performance, the "Farmland Cloud Shopping" model has achieved rapid growth in agricultural product sales through digital supply chain reconstruction and precise matching of production and sales, while reducing supply chain costs and improving the overall gross profit margin of the platform. In terms of non-financial performance, the model has enhanced the company's brand influence and industry competitiveness through technological innovation and social value creation, winning policy support and social recognition for Pinduoduo.

At the level of rural revitalization, the "Farmland Cloud Shopping" model has played a positive role through the dual paths of industrial prosperity and affluent life. On the one hand, digital technology has promoted the upgrading of agriculture from decentralized management to a modern industrial system, optimized the planting structure, reduced production costs, and promoted the prosperity of the agricultural product e-commerce ecosystem. On the other hand, direct purchase premiums and employment expansion have significantly increased farmers' income, and the improvement of rural infrastructure has laid the foundation for the sustainable development of rural areas.

However, this study still has certain limitations. First, the research data mainly comes from public reports and cases and lacks in-depth analysis of internal corporate operating data. Second, the differences in the adaptability of the model to different regions and different agricultural products

have not been fully explored. Finally, follow-up research on long-term impacts still needs to be further developed. Future research can be carried out in the following directions. First, evaluate the sustainability of the "Farmland Cloud Shopping" model through long-term tracking. Second, compare and analyze the implementation effect of this model in different regions. Third, explore the integrated application of agricultural digitalization and other emerging technologies (such as blockchain). These studies will provide a more comprehensive reference for e-commerce platforms to optimize agricultural product business models and for the government to formulate relevant policies.

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