A Closed-Loop Model for Precision E-Commerce Marketing of Wuyi Rock Tea- Strategy Development and Empirical Analysis from a Big Data Perspective

Zhaoyong Ouyang* , Lina Sha
Graduate University of Mongolia, Ulaanbaatar, Mongolia
**Corresponding author*

Abstract:With the advancement of big data technologies and the deepening integration of the "Internet Plus Agriculture" initiative, e-commerce for agricultural products is rapidly evolving toward greater intelligence and precision. As a high-value agricultural product with both geographical indications and cultural significance, Wuyi Rock Tea continues to face challenges in its e-commerce marketing, including imprecise user targeting, weak content delivery, and excessive dependence on third-party platforms.In response to these issues, this study integrates the characteristics of big data with the Customer Lifetime Value model to construct a five-dimensional closed-loop precision marketing framework encompassing data collection, user insight, content-driven engagement, strategic execution, and performance feedback. To empirically validate the model, two representative cases—Songshan Shouwu Tea and Longquanyi Honey Peach—are selected for comparative analysis.Based on the research findings, this paper proposes a set of strategic directions aimed at enhancing the digital transformation and precision marketing of culturally embedded agricultural products. These include building regional multi-source data platforms to support more comprehensive information integration; developing multidimensional user profiling and tiered value segmentation mechanisms to improve targeting accuracy; creating a culture-centered content dissemination matrix to strengthen emotional resonance and brand identity; constructing a cross-platform, integrated execution system to optimize conversion pathways; and establishing feedback-driven data loops that enable continuous strategy refinement and intelligent optimization. Together, these approaches offer both theoretical insights and practical guidance for promoting more effective marketing practices in the context of culturally significant agricultural e-commerce.

Keywords: Big Data; Wuyi Rock Tea; Precision Marketing; Customer Lifetime Value; Digital Agriculture

1. Introduction

In the context of the continued advancement of the "Digital Countryside" strategy and the rapid development of e-commerce platforms, marketing models for agricultural products are shifting from traditional distribution channels toward data-driven, precision-oriented operational pathways. The widespread application of big data technologies has significantly enhanced the controllability and intelligence of key processes such as user identification, behavioral insight, content delivery, and conversion evaluation, thereby driving profound transformations in agricultural e-commerce.Wuyi Rock Tea, as a high-value tea product with national geographical indication and deep cultural symbolism, has experienced steady growth in online sales in recent years. However, in actual e-commerce operations, it continues to face several persistent challenges, including shallow user profiling, weak cultural communication, low repurchase rates, and heavy dependence on external platforms—all of which constrain the full realization of its brand value.In particular, with regard to precision marketing, most existing studies focus on individual technologies or isolated strategies, lacking the construction of systematic models and empirical case validation. As a result, current research often fails to provide actionable,

comprehensive solutions that enterprises can implement effectively.

This study integrates the characteristics of big data with the customer lifecycle value model to propose a five-dimensional closed-loop precision marketing framework. Through a comparative analysis of two representative cases—Songshan Shouwu Tea and Longquanyi Honey Peach—the model's applicability and potential for broader implementation are empirically evaluated. Building on these findings and taking into account the market characteristics of Wuyi Rock Tea, the study further puts forward targeted strategies for marketing optimization. The aim is to offer both theoretical insights and practical guidance for precision e-commerce marketing of culturally embedded agricultural products.

2. Model Construction

Based on the theoretical foundations of big data and the customer lifecycle value model, this study constructs a five-dimensional closed-loop precision marketing model tailored to the e-commerce operations of culturally embedded agricultural products. Anchored in the principles of being user-centered, data-driven, content-led, and technology-enabled, the model emphasizes the closed-loop logic and systemic coordination of the entire marketing process. It aims to provide a systematic and replicable digital marketing solution for high-value agricultural products such as Wuyi Rock Tea.The model consists of five core components: data collection, user insight, content-driven engagement, strategy execution, and performance feedback. These components are interconnected in a dynamic and continuously optimized loop, forming a closed structure that allows for real-time adjustment, iterative refinement, and sustainable improvement of marketing effectiveness[1-4],See Figure 1.

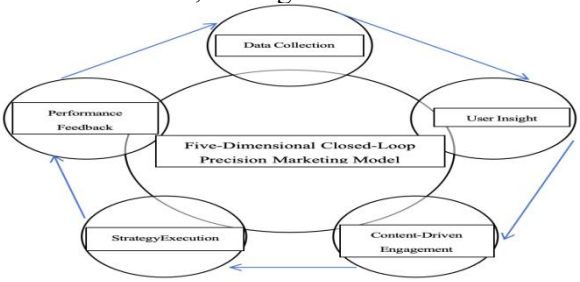

Figure 1. The Five-Dimensional Closed-Loop Precision Marketing Model

3. Bottleneck Analysis of Wuyi Rock Tea E-Commerce Marketing

To gain a deeper understanding of the key limitations in Wuyi Rock Tea e-commerce marketing, this study draws upon field research from 12 representative tea brands, operational data from major platforms, and user interview findings. Through this comprehensive analysis, four core bottlenecks have been identified as major constraints to improving marketing effectiveness.

3.1 Limited Data Collection Dimensions and Weak User Identification Capabilities

At present, most Wuyi Rock Tea brands still rely heavily on basic backend data provided by e-commerce platforms—such as geographic location, gender, and purchase amount—for coarse user segmentation. There is a notable lack of proactive data collection initiatives and insufficient capacity for integrating data from multiple channels. Deeper behavioral data—such as browsing paths, content preferences, and social interactions—has not yet been systematically captured or utilized, making it difficult to construct dynamic and multidimensional user profiles.More critically, severe data silos exist between platforms, preventing brands from aggregating and integrating user information across channels. This significantly undermines the accuracy of subsequent user insight and strategy formulation, ultimately weakening the effectiveness of precision marketing efforts.

3.2 Insufficient User Insight and Lack of Precision in Content Targeting

Although Wuyi Rock Tea possesses rich cultural assets—such as intangible heritage craftsmanship, ecological cultivation practices, and traditional tea rituals—most brands still focus their marketing efforts on price promotions, product features, and aesthetic packaging. Few have developed differentiated content strategies based on users' interests, preferences, and emotional needs.While dissemination formats such as livestreaming and short videos are widely adopted, the content itself often lacks originality, cultural depth, and brand distinctiveness. Because user segmentation remains unclear and behavioral interest paths are poorly defined, marketing content suffers from a low degree of audience matching. This significantly limits the

formation of brand recognition and emotional resonance, making it difficult to establish meaningful mental associations with users.

3.3 Lack of Tiered Strategy Execution and Lifecycle-Based Customer Management

From a user operations perspective, most Wuyi Rock Tea brands remain focused on single-purchase conversions, lacking a sustained management mechanism for the full customer lifecycle. Survey data indicates that over 90% of e-commerce sales are concentrated around major holidays such as the Spring Festival and Mid-Autumn Festival, with little systematic user engagement or reactivation during off-peak periods. As a result, the average repurchase rate remains below 12%.Most enterprises have not established a comprehensive membership tier system, points-based incentive mechanisms, or exclusive benefit programs. This absence of structured customer stratification prevents high-value users from receiving differentiated services, leading to rising churn and inactivity rates after initial conversion. Consequently, marketing investments fail to translate into long-term brand equity.

3.4 Heavy Platform Dependence and Lack of Autonomous Operation and Feedback Optimization

Currently, Wuyi Rock Tea brands exhibit a high level of dependence on third-party platforms for marketing and sales, with over 80% of transactions occurring through public-domain platforms. As a result, when platform traffic policies shift or traffic acquisition costs rise, brands are vulnerable to a negative cycle of traffic volatility, declining sales, and user attrition.At the same time, most brands lack self-built data analytics systems and customer relationship management feedback mechanisms. Key performance indicators—such as content click-through rates, conversion rates, and customer satisfaction—are often not effectively tracked or analyzed. This leads to marketing strategies being based primarily on intuition and experience rather than data, making it difficult to achieve closed-loop optimization and continuous improvement.

4. Comparative Case Analysis and Model Validation

To validate the applicability and practical value of the five-dimensional closed-loop precision marketing model, this study selects two representative categories of culturally embedded agricultural products for comparative case analysis. By examining and comparing their performance across the five dimensions—data collection, user insight, content-driven engagement, strategy execution, and performance feedback—this chapter distills strategic insights that offer practical guidance for the precision marketing of Wuyi Rock Tea.

4.1 Case Study 1: Closed-Loop Precision Marketing Practices of Songshan Shouwu Tea

Songshan Shouwu Tea, positioned as a mid-to-high-end tea product with both health benefits and cultural significance, primarily targets health-conscious middle-aged and elderly consumers over the age of 35. Its precision marketing approach reflects a high level of integration between deep user behavior analysis and systematic cultural content delivery.

In terms of data collection, the brand utilizes embedded tracking technologies within its WeChat Mini Program and e-commerce storefronts to collect data on user browsing paths, search keywords, review content, and add-to-cart behaviors. This is further integrated with follower interaction data from the Douyin platform to achieve multi-channel data fusion.

For user insight, the brand applies frequency analysis of user interactions along with sentiment analysis to construct three core user profiles: “health and wellness seekers,” “intangible cultural heritage enthusiasts,” and “family-oriented gift buyers.” These profiles support tiered user management and targeted engagement.

From the content-driven perspective, the brand centers its messaging on themes such as “intangible heritage craftsmanship” and “wellness culture,” developing expert interview-style short videos, livestreams demonstrating production techniques, and offline tea ceremony experiences. This enhances both the authority and immersive quality of the content, significantly increasing user engagement and purchase intent.

Regarding strategy execution, the brand has established a conversion pathway of

"Douyin-based awareness → WeChat-based conversion → CRM-based retention." Through membership tiers, scheduled follow-ups, and exclusive services, the brand effectively activates and retains high-value customers.

On the performance feedback side, the company tracks multiple key indicators such as order completion rate, click-to-conversion rate, and Net Promoter Score (NPS). A/B testing is also used to optimize messaging and campaign timing. Data shows that six months after implementation, the brand's repurchase rate increased from 9.6% to 27.8%, and customer satisfaction rose to 82 points, indicating the initial formation of a well-functioning closed-loop marketing system.

4.2 Case Study 2: Closed-Loop Precision Marketing Practices of Longquanyi Honey Peach

Longquanyi Honey Peach is a highly seasonal, short-decision-cycle fresh agricultural product. Its primary target audience consists of family households aged 25 to 45, who tend to prioritize cost-effectiveness and fast delivery services. This case study focuses on leveraging short-form video promotions, geo-targeted advertising, and logistics promise management to quickly build consumer trust and drive conversions.

In terms of data collection, the brand relies primarily on order data from the Pinduoduo platform and geo-heatmaps to model user purchase locations, timing patterns, and repurchase frequency. Additionally, user comments, sharing paths, and interaction frequency on Douyin are tracked to inform content design and enable targeted distribution.

For user insight, consumers are categorized into three main segments: "everyday household buyers," "holiday gift purchasers," and "community bulk buyers." By analyzing their purchasing times, packaging preferences, and delivery requirements, the brand is able to optimize product bundling and interface layout for improved relevance and user experience.

From the content-driven perspective, the brand developed a series of short videos themed "from tree to table," visually showcasing the full harvesting process. These are paired with livestreaming, traceability tags, and authentic farm footage to construct a transparent and trustworthy product narrative under the theme of "freshness you can see."

Regarding strategy execution, the brand employs a conversion pathway centered on Pinduoduo for traffic acquisition, Douyin for user interaction, and WeChat Mini Programs for private domain retention. Tactics such as flash sales, group-buying within social communities, and family-size product promotions are used to enhance conversion efficiency. To encourage repeat purchases, a closed-loop fulfillment system combining order promises, real-time logistics tracking, and post-sale feedback has been implemented, supported by distributed cold chain partnerships to ensure delivery reliability.

On the performance feedback side, real-time dashboards are used to monitor short video click-to-conversion paths, enabling dynamic adjustments to copywriting, content order, and promotion timing. Following implementation, the brand experienced a threefold increase in average daily orders, a 62% reduction in customer complaint rate, and significantly extended user retention cycles—demonstrating a highly responsive and effective closed-loop marketing system.

4.3 Analysis of Model Applicability and Structural Stability

The structured analysis of the two case studies—Songshan Shouwu Tea and Longquanyi Honey Peach—reveals that, despite significant differences in target users, consumption scenarios, and operational strategies, both precision marketing pathways can be clearly mapped onto the five-dimensional closed-loop model proposed in this study. This observation indicates that the model demonstrates strong structural stability and transferability, making it well-suited to support the digital transformation of a wide range of agricultural products.

5. Strategic Recommendations

5.1 Establish a Regional Multi-Source Data Platform

A unified data collection and operations platform should be established in the core production areas of Wuyi Rock Tea, integrating user behavior data from major e-commerce and social platforms such as Taobao, Douyin, Pinduoduo, and WeChat Mini Programs. This integration would help

eliminate data silos across platforms. The platform should include functions such as real-time user behavior tracking, consumer tag management, public sentiment monitoring, and trending topic identification. It would serve as a "Digital Operations Hub for Wuyi Rock Tea" shared by both brands and government stakeholders, providing a data foundation for subsequent precision marketing strategies[5].

5.2 Develop a Multidimensional User Profiling and Value Segmentation Mechanism

It is recommended to use big data analytics and behavioral modeling to build multidimensional user profiles based on interest, motivation, behavioral paths, and lifecycle stages. A segmented user tagging system can be developed around core types such as "cultural connoisseurs," "health-conscious consumers," and "business gift buyers." By evaluating user value through the lens of customer lifecycle value, brands can shift from "average delivery" strategies to tiered, targeted engagement—enhancing both resource allocation efficiency and user response effectiveness[6].

5.3 Build a Culture-Centered Content Communication Matrix

To address the current issues of weak expression and low immersion in content marketing, it is essential to strengthen the integrated representation of tea culture, intangible heritage techniques, and ecological values. A content ecosystem should be constructed that combines a "brand-led narrative" with multi-platform distribution. It is recommended to establish a "Wuyi Rock Tea Cultural IP Library" and a creative content support mechanism to promote the development of content forms such as short videos, livestreaming, interactive experiences, and user-generated co-creation—enhancing users' cultural memory and emotional attachment to the brand[7].

5.4 Construct a Cross-Platform Integrated Conversion System

An integrated omnichannel marketing loop should be established—linking awareness generation on Douyin, order placement on Tmall, and long-term engagement within WeChat private domains. Seamless transitions across these touchpoints would ensure the consistency of user journeys. It is advisable to introduce systems such as reward points, membership tiers, exclusive offers, and event booking features to improve conversion efficiency and repurchase rates. Third-party service providers may be engaged to deploy SCRM systems, enabling unified user data aggregation and behavioral tracking across platforms[8].

5.5 Build a Feedback-Driven and Intelligent Optimization Mechanism

A marketing data dashboard and intelligent optimization system should be developed, incorporating key performance indicators such as conversion rate, click-through rate, order completion rate, content engagement rate, and Net Promoter Score (NPS). Tools such as A/B testing, recommendation algorithms, and heatmap analysis should be adopted to enable real-time content adjustment and strategy iteration. This would support a shift from experience-driven decision-making to data-driven precision marketing, thereby enhancing the intelligence and adaptability of the entire marketing system.

6. Conclusion and Future Outlook

This study, grounded in the development trends of agricultural e-commerce under the influence of big data, takes Wuyi Rock Tea as a focal case to construct a five-dimensional closed-loop precision marketing model based on the customer lifecycle value framework. The model includes five key stages: data collection, user insight, content-driven engagement, strategy execution, and performance feedback. Through comparative analysis and empirical validation using two representative cases—Songshan Shouwu Tea and Longquanyi Honey Peach—the model has been confirmed to possess strong structural stability, cross-category applicability, and practical feasibility.

Based on these findings, the study addresses key challenges in Wuyi Rock Tea e-commerce marketing, such as imprecise user identification, insufficient content expression, and overreliance on third-party platforms. It proposes five strategic optimization directions: building a multi-source regional data platform, developing multidimensional user profiling and value segmentation mechanisms, constructing a

culture-centered content matrix, establishing cross-platform conversion pathways, and implementing intelligent feedback and optimization systems. Together, these strategies offer replicable pathways and theoretical support for the digital transformation of culturally embedded agricultural products.

Future research may be extended in three directions. First, by incorporating more product categories and regional samples to further test the model's universality and boundary conditions. Second, by integrating emerging technologies such as artificial intelligence and blockchain to enhance the real-time quality and reliability of data analysis. Third, by exploring the integration of emotional value and social dissemination mechanisms to support long-term brand value enhancement and global market expansion for culturally significant agricultural products.

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