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PATHWAYS FOR VALUE REALIZATION OF AGROECOLOGICAL PRODUCTS IN GUANGDONG PROVINCE

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Abstract: This study investigates market-oriented approaches for the value realization of agroecological products in Guangdong Province, China. It analyzes the core concepts of agroecological products and their marketization pathways, examines the current development status and challenges faced by such products in Guangdong, and focuses on key strategies, including industrialization, channel development, marketing and promotion, regional brand building, and industrial chain extension. Corresponding safeguard mechanisms are also proposed to support these initiatives.
Keywords: Agroecological products; Guangdong province; Value realization; Market-oriented approach

1 INTRODUCTION

1.1 Agroecological Products

Agroecological products are those derived from agricultural production systems that intentionally apply agroecological principles. These principles include biodiversity, low external inputs, ecological integration and the use of local resources [1]. These products are produced in clean environments using methods that minimize ecological disruption, contain harmful substances below national standard limits and possess characteristics of ecological sustainability, safety, and high quality. They mainly include organic and green agricultural products [2]. Throughout all stages of development—from seed selection to harvesting in agricultural production and from input to processing in related products—agroecological products are produced without the use of chemical fertilizers, additives, or procedures harmful to the environment or human health [3]. The core concepts of agroecological products include:
1) Clean production environment. Water, soil, and air quality meet national standards, with effective buffer zones from pollution sources.
2) Ecological production methods. Production follows ecological principles, promoting material recycling, biodiversity conservation, and environmentally friendly fertilization and pest control technologies.
3) Strict control of chemical inputs. The use of synthetic chemical substances is strictly restricted. Organic products prohibit such inputs entirely, while green products allow limited use under stringent residue standards.
4) High product quality. These products outperform conventional agricultural products in safety, nutritional value, flavor, and traceability.
The overall strategies of economical agriculture include using practices that (a) grow healthy plants with strong defense capabilities, (b) suppress pests, and (c) enhance populations of beneficial organisms [4].

1.2 Market-oriented Path for Value Realization

The value realization of agricultural products refers to the process of transforming products into marketable commodities and monetary value. This process involves not only commodity exchange but also a systematic cycle encompassing value creation, transformation, distribution, and recognition.
The market-oriented path refers to the process through which agricultural products move from production to market that can circulate efficiently and gain consumer acceptance. This process typically includes:
1) Productization and standardization: Transforming primary agricultural products into standardized commodities with stable quality.
2) Channel construction: Establishing efficient distribution networks to shorten the distance between production and sales, reduce intermediaries, ensure freshness, and minimize losses.
3) Marketing and promotion: Stimulating consumer demand through targeted communication, building brand recognition, and expanding market reach.
4) Brand building: Creating differentiated symbolic value to enhance consumer perception and competitiveness.
5) Industrial chain extension: Expanding value creation through deep processing and industrial integration.

2 CURRENT STATUS AND ISSUES IN GUANGDONG PROVINCE

2.1 Current Status

Located in the southern subtropical zone, Guangdong Province enjoys a warm and humid climate and rich biodiversity, providing favorable natural conditions for the development of agroecological products. In recent years, the province has

actively implemented the "Green and Beautiful Guangdong" initiative, transforming ecological advantages into developmental strengths and laying a solid foundation for sustainable agricultural production.

The five northern cities—Shaoguan, Qingyuan, Heyuan, Meizhou, and Yunfu—account for 42.7% of the province's land area and are often referred to as the "ecological barrier" of Guangdong. This region plays a crucial role in ecological protection and serves as a key production base for agroecological products.

According to data released in September 2025, Guangdong has 92 certified organic products, 799 green food products, 63 geographical indication agricultural products, and 578 nationally recognized specialty agricultural products, totaling 1,532 certified products.

Guangdong has developed a diversified eco-agricultural system characterized by multiple product categories and relatively complete industrial chains, including rice, tea, Hua Juhong, infant formula, dragon fruit, guava, and tea seed oil. Representative regional brands include Phoenix Dancong tea, Xinhui tangerine peel, Yingde black tea, Qingyuan chicken, and Hua Juhong, some of which have achieved annual output values exceeding 10 billion yuan.

2.2 Major Issues

2.2.1 Insufficient support for green finance

The production cycle of agroecological products is relatively long, with high input costs and significant risks. However, specialized green financial products remain limited in coverage, and innovative financing tools—such as forest tenure mortgages and carbon sink pledges—have not been widely adopted. In addition, agricultural insurance coverage is insufficient, making it difficult to effectively protect the value of agroecological products.

2.2.2 Weak technological innovation capacity

The technological support system for ecological agriculture remains underdeveloped. First, certain key seed resources still rely on imports, indicating insufficient domestic innovation capacity. Second, the extension system for ecological agricultural technologies is inadequate. Although localized models such as ecological tea production have achieved some success, large-scale promotion is constrained by insufficient technical training and service support. Third, deep-processing technologies remain a bottleneck, limiting value-added development.

2.2.3 Incomplete standardization system

The standardization system for ecological agriculture remains underdeveloped. First, there is no unified definition or standard for "agroecological products ," resulting in inconsistent interpretations across regions and affecting product quality and consumer trust. Second, a comprehensive technical standards system covering the entire industrial chain—from cultivation to processing—has yet to be established. Third, multiple certification systems lack coordination, leading to redundant certification processes and increased costs for enterprises.

2.2.4 Low organizational capacity of market entities

Although the returns of ecological agriculture may be positive, producers need to weigh the trade-off between returns and costs [5]. Small-scale farmers generally lack the capacity to engage independently in ecological agriculture, which requires advanced technology, capital investment, and professional management. Additionally, leading agricultural enterprises are unevenly distributed, with a concentration in the Pearl River Delta and limited presence in less developed areas. Furthermore, benefit-sharing mechanisms between enterprises and farmers remain underdeveloped, preventing farmers from fully participating in value-added gains.

2.2.5 Constraints in resource allocation

There are structural constraints in key resource factors. First, land-use policies lack flexibility, making it difficult to meet the needs of integrated agricultural and tourism projects. Second, there is a shortage of high-quality talent in rural areas, and existing education systems do not adequately align with industry needs. Third, financial support remains insufficient, with limited participation from social capital.

2.2.6 Combined market and natural risks

Ecological agricultural production faces both market and natural risks. Market fluctuations often prevent high-quality products from achieving corresponding price premiums. For example, in some regions, agricultural products have experienced oversupply despite good harvests, resulting in declining prices. This reflects imperfections in the market mechanism.

In addition, the cobweb model effect leads to cyclical overproduction, as farmers base production decisions on previous market conditions, resulting in repeated cycles of expansion and oversupply.

2.2.7 Insufficient integration of agriculture, culture, and tourism

The integration of ecological agriculture with cultural and tourism industries remains limited. Although some regions possess abundant ecological and tourism resources, product offerings are relatively homogeneous, resulting in short visitor stays and low consumption levels. In addition, the lack of standardized services and experiential products limits the ability of tourism to promote the value realization of agroecological products.

3 MARKET-ORIENTED PATH ANALYSIS FOR THE VALUE REALIZATION OF AGROECOLOGICAL PRODUCTS IN GUANGDONG PROVINCE

3.1 Industrialization Pathway

The industrialization of agroecological products refers to the integration of production, processing, distribution, and sales into a modern agricultural system. Through scale expansion, standardized production, brand development, and industrial integration, this process promotes value creation and enhancement.

At its core, industrialization aims to transcend the traditional separation between production and sales by establishing an integrated system that connects production, processing, distribution, branding, and services, thereby transforming ecological advantages into economic value.

3.1.1 Industrialization logic of agroecological products

1) Multifunctionality Theory

From the perspective of agricultural multifunctionality, agriculture generates not only economic value but also ecological and socio-cultural value. These include environmental protection, biodiversity conservation, cultural heritage preservation, and rural employment. This multidimensional value structure provides the foundation for the industrialization of agroecological products.

The value of agroecological products can be categorized into three dimensions: economic value, ecological value, and socio-cultural value. Economic value is realized through market exchange; ecological value is reflected in environmental services such as soil conservation and carbon sequestration; and socio-cultural value is embodied in cultural heritage and rural development. The key objective of industrialization is to transform these values—especially ecological and cultural values—into measurable economic returns. Therefore, the economic returns of ecological agriculture may exceed those of traditional and industrial agriculture [6,7].

2) Organizational Forms

In the initial 3–5 years of establishing a farm (including the construction of ecological infrastructure such as live fences, hedgerows, grassy areas, and insect habitats), costs are typically high. However, as functional biodiversity increases in later stages, the demand for external inputs declines, and maintenance costs decrease accordingly [8].

A key challenge in the industrialization process is connecting small-scale farmers with large markets. Due to information asymmetry, high asset specificity, and long production cycles, transaction costs are relatively high. Organizational models—such as leading enterprises, farmers' cooperatives, and industrial consortia—help address these challenges by integrating production resources, improving coordination, and enhancing market access.

3) Value Creation and Distribution

From a value chain perspective, the value of agroecological products is generated across multiple stages, including research and development, production, processing, distribution, and marketing. However, most farmers remain concentrated in the primary production stage, where value-added is relatively low, while higher profits are captured in downstream activities such as processing and branding.

Industrialization enables producers to move toward higher value-added segments, thereby increasing income and improving overall value distribution.

3.1.2 Development stages of ecological agricultural product industrialization

1) Spontaneous germination stage (1980s-1990s)

With the advancement of reform and opening-up and the improvement of urban and rural residents' income levels, some consumers have begun to pay attention to the quality and safety of agricultural products. China started organic agricultural production in 1990, and in 1994, the Organic Food Development Center of the State Environmental Protection Administration was established, becoming the earliest organic agriculture promotion institution in China. This stage was characterized by decentralized production, small scale, reliance on acquaintance networks and export channels, low industrialization level, and limited market awareness.

2) Government-led phase (Early 2000s–2010s)

In the early 21st century, China established an organic and green food certification system, providing a standardized institutional framework for the industrialization of agroecological products . During this period, governments at all levels began to incorporate ecological agriculture into agricultural development plans, promoting the industrialization of agroecological products through project support, financial subsidies, and technology promotion. Meanwhile, the leading role of agricultural enterprises became increasingly prominent, with a number of companies engaged in organic and green agriculture emerging, and the industrial chain gradually extending.

3) Industrial Integration Stage (2010s-Present)

In 2016, the General Office of the State Council issued the "Guiding Opinions on Promoting the Integration of Primary, Secondary, and Tertiary Industries in Rural Areas," explicitly advocating for deep integration between agriculture and sectors such as tourism, culture, education, and healthcare. This policy orientation has created new development opportunities for the industrialization of agroecological products. During this phase, industry integration deepened, digital empowerment accelerated, brand building strengthened, and value realization expanded from product sales to service experiences.

The industrialization process of ecological agriculture in Guangdong follows this process, but it should be noted that there are still many problems in the industrialization of ecological agriculture in Guangdong.

3.1.3 Practical challenges in the industrialization of agroecological products in Guangdong

1) Insufficient Development of Business Entities

First, small-scale farmers have limited capacity to participate in ecological agriculture. Ecological farming requires advanced technology, substantial capital, and professional management expertise, which small-scale farmers struggle to acquire independently. Second, the leadership capacity of leading enterprises is unevenly distributed. Key national agricultural industrialization enterprises are predominantly concentrated in economically developed regions, with fewer in underdeveloped areas. This regional imbalance hinders the driving effect of ecological agriculture industrialization. Third, benefit-sharing mechanisms remain insufficiently robust. Some leading enterprises have yet to establish strong collaborative frameworks with farmers, leaving farmers unable to fully benefit from the value-added returns in the ecological agricultural product supply chain.

2) Structural Deficiencies in Factor Guarantees

First, challenges exist in securing industrial land use. Agricultural land policies exhibit limited flexibility, resulting in a spatial mismatch between cultivated land and forest land in hilly and mountainous areas. Second, there is a shortage of interdisciplinary talent, coupled with a disconnect between talent cultivation and industrial demand. Third, support for scientific and technological innovation is insufficient. Core seed sources rely on foreign supply, the promotion of agricultural machinery in mountainous regions remains inadequate, and grassroots agricultural technical services are weak.

3) Incomplete Market System

First, the certification system lacks seamless integration. The fragmented certification framework—including organic certification, green certification, geographical indication certification, and national certification for renowned specialty agricultural products—fails to achieve effective coordination, leaving enterprises faced with the challenge of "multiple certifications and redundant investments." Second, market order requires further standardization. Many eco-agricultural brands frequently face counterfeit products and substandard goods, which erodes brand reputation and consumer trust. Third, information asymmetry persists between producers and consumers. The quality advantages of agroecological products struggle to translate into price competitiveness amid market fluctuations. The absence of industry associations exacerbates this information gap, leaving farmers unable to access accurate market data to guide their production decisions.

4) Superposition of Natural Risk and Market Risk

Natural disasters undermine production stability. Ecological agricultural production remains highly dependent on natural conditions, and the increasing frequency of extreme weather events exacerbates production risks. Taking the lychee industry as an example, mild winters lead to low flower formation rates in mid-to-late maturing lychees, severely affecting both yield and quality. Market fluctuations create a paradox where premium products struggle to command fair prices. The ecological premium of organic agricultural products proves unsustainable during market downturns, while high-quality products face persistent price volatility challenges.

5) Insufficient Support for Green Finance

Agroecological products are characterized by long production cycles, high input costs, and significant risks. However, targeted green credit products have limited coverage, while agricultural insurance coverage amounts remain insufficient, making it difficult to safeguard the high-quality value of agroecological products through insurance mechanisms.

3.1.4 Optimization paths for the industrialization of agroecological products

1) Cultivate Diversified Business Entities

Support leading agricultural enterprises to grow stronger and expand. Encourage leading agricultural enterprises to integrate industrial chain resources through mergers and acquisitions, strategic alliances, and other means, thereby building comprehensive full-industry-chain operational capabilities. Support leading enterprises in extending into high-value-added segments such as seed industry R&D, deep processing, and brand marketing, leveraging their driving role in industrialization.

Enhance the development quality of farmers' specialized cooperatives. Support farmers' specialized cooperatives in extending their operations to processing and sales stages based on specialization, establishing an integrated business model of "production + processing + sales." Strengthen the standardized construction of cooperatives to improve their management capabilities and service levels.

Improve the benefit linkage mechanism. Establish and refine the profit-sharing mechanism between leading enterprises and farmers, enabling farmers to share in the value-added benefits of the industrial chain through various approaches such as contract farming, shareholding cooperation, profit returns, and service-driven initiatives.

2) Strengthen Factor Support

Optimize industrial land use policies. Improve management policies for facility agriculture land use, and appropriately relax restrictions on land use for supporting facilities in ecological agriculture. Explore land use models such as "spot land supply" and "flexible tenure periods" to meet the diversified land use demands of ecological agriculture. Promote the organic integration of territorial spatial planning with agricultural development plans to optimize the spatial layout of agricultural production.

Strengthen talent team development. Implement the Ecological Agriculture Talent Cultivation Project to train a group of interdisciplinary professionals proficient in technology, business management, and administration. Enhance collaboration between agricultural colleges and ecological agriculture bases to achieve precise alignment between talent development and industrial demands. Improve talent attraction incentive mechanisms to bring high-level professionals into the field of ecological agriculture.

Strengthen technological innovation support. Increase investment in key technology research and development for ecological agriculture to overcome seed source bottlenecks. Enhance the R&D and promotion of agricultural machinery suitable for mountainous operations to improve the level of mechanization in hilly and mountainous areas for ecological agriculture. Improve grassroots agricultural technology extension service systems to bridge the "last mile" of technology implementation.

3) Improve the Market System

Promote the integration and alignment of certification systems. Facilitate mutual recognition and interoperability among various certification systems, such as organic certification, green certification, geographical indication certification, and certification for renowned, distinctive, high-quality, and innovative agricultural products, to reduce certification costs for enterprises. Establish a unified certification information platform for agroecological products to achieve interconnection and sharing of certification data.

Improve the quality-price mechanism. Refine the pricing mechanism for agroecological products to ensure that the ecological premium is fully reflected in market prices. Develop production-sales linkage models such as contract farming and direct procurement and supply to reduce intermediary links, enabling producers to benefit more fully from ecological value.

4) Improve Risk Prevention and Control Mechanisms

Improve the agricultural insurance system. Expand the coverage of ecological agricultural product insurance and raise coverage limits. Develop innovative insurance products such as climate index insurance and price index insurance tailored for ecological agriculture to enhance the risk resilience of ecological agricultural producers.

Strengthen market information services. Establish and improve the market information monitoring and early warning system for agroecological products to promptly release information on production, prices, and supply-demand dynamics, and to guide farmers in making rational decisions. Support industry associations in leveraging their information integration capabilities to mitigate the issue of blind expansion of planting areas caused by the "spider web model."

Enhance the capacity to respond to natural disasters. Strengthen monitoring and early warning systems for agricultural meteorological disasters, and improve disaster prevention and mitigation infrastructure. Promote adaptive production technologies such as stress-resistant crop varieties and facility agriculture to enhance the stability of ecological agricultural production.

3.2 Channel Construction: Spatiotemporal Extension of Distribution Networks

3.2.1 The logic of spatiotemporal extension

Distribution represents the extension of production processes within the distribution domain and serves as a critical link in value realization. The inherent characteristics of agricultural products—freshness and perishability, extended production cycles, and low supply elasticity—make them highly sensitive to distribution efficiency. The core mission of channel development lies in leveraging institutional design and technological solutions to effectively extend agricultural products across both physical space and temporal dimensions.

Spatial extension refers to the process by which agricultural products expand beyond their local production markets to regional, national, and even international markets. Temporal extension denotes the alignment between agricultural supply and consumer demand across timeframes. At its core, temporal extension involves utilizing storage facilities, cold chain logistics, and processing technologies to achieve time-smoothing in product supply and value preservation. Within modern distribution systems, temporal extension capability has become a key indicator for assessing the maturity of agricultural product marketization.

3.2.2 Structural evolution: from traditional hierarchical to diverse symbiotic channel forms

Traditional hierarchical distribution channels are characterized by a multi-tiered structure: origin-based purchasers → wholesale markets → destination wholesalers → farmers' markets/retailers → consumers. This model has long served as the backbone of agricultural product circulation, offering advantages such as extensive coverage, strong absorption capacity, and no strict production scale constraints. However, it also presents significant drawbacks: excessive chain length leads to high logistics costs, distorted price signals, persistently high loss rates, and structural profit imbalances caused by the presence of multiple intermediaries between producers and consumers.

Modern distribution channels exhibit two evolutionary trends. First, direct supply models such as "farm-to-supermarket connections" streamline distribution layers and enhance product quality. Second, e-commerce platforms enable cross-temporal and spatial coordination, driving circulation into the digital era. Currently, traditional wholesale markets, chain supermarkets, live-streaming e-commerce, and community group purchases coexist and integrate into a multi-center, grid-based distribution ecosystem.

3.2.3 Realistic challenges: structural contradictions in channel construction

While agricultural product distribution channels have made significant progress in terms of quantitative scale and morphological diversity, a number of fundamental contradictions remain unresolved when examined from a structural perspective.

First, there is the asymmetry of channel power. In the agricultural product distribution chain, channel control is highly concentrated among large purchasers, chain retail enterprises, and leading e-commerce platforms, while scattered small farmers and cooperatives are placed in a weak bargaining position. Producers' share of income in the industrial chain remains consistently low.

Second, there are the constraints imposed by infrastructure deficiencies. China still faces significant shortcomings in the construction of origin storage and preservation facilities for the "first mile," with insufficient coverage of cross-regional cold chain distribution systems and persistently high circulation loss rates.

Third, information asymmetry persists. The issue of quality information asymmetry in agricultural product distribution has not been fundamentally resolved. Information on origin environmental conditions, quality control during production processes, and traceability in distribution stages often fails to be accurately and completely transmitted to consumers.

Fourth, there exists a structural tension between traditional and modern channels. Traditional channels bear significant employment and grassroots market stabilization functions but exhibit low efficiency and insufficient standardization. Modern channels demonstrate high efficiency and clear regulations yet impose stringent requirements on supply scale and stability, thereby excluding a large number of small-scale farmers.

3.2.4 Path optimization: establishing an efficient and inclusive agricultural product circulation system

At the infrastructure level, efforts should be accelerated to address deficiencies in cold chain storage facilities at production sites, establishing a comprehensive cold chain distribution network that covers origin collection and distribution, transit transportation, and destination sorting. By improving connectivity conditions between the "first mile" and "last mile" stages, the spatiotemporal extension capacity of agricultural product circulation can be effectively enhanced, thereby reducing circulation losses.

In terms of institutional innovation, efforts should be made to enhance the organizational structure of agricultural distribution systems. It is essential to foster the growth of new business entities such as farmers' professional cooperatives and agricultural industrialization consortia, thereby strengthening small-scale farmers' collective bargaining power in supply chain negotiations. Concurrently, regulatory frameworks and standards for agricultural product distribution should be refined to standardize market practices among distribution stakeholders, preventing excessive concentration and abuse of power within the supply chain ecosystem.

In terms of technological empowerment, the integration and application of digital technologies throughout the entire distribution chain should be deepened. Efforts should be made to transition agricultural product circulation from segmented management to full-process digital traceability, while establishing and improving quality information transmission mechanisms that cover production origins, distribution channels, and consumption stages. Big data should be utilized to optimize supply-demand matching, reduce information asymmetry, and ensure that price signals more accurately reflect true market value.

In terms of governance practices, it is essential to respect the diversity of agricultural product distribution channels and promote the organic integration of traditional and emerging channels. Efforts should focus on advancing digital transformation and service expansion in wholesale markets, supporting e-commerce platforms in establishing long-term stable partnerships with production bases, and exploring diversified connection models between community commerce and direct supply from origins. This will help create a modern distribution ecosystem characterized by clear stratification, functional complementarity, and inclusive symbiosis.

3.3 Marketing and Promotion: Precise Reach of Consumer Identity

Marketing and promotion serve as a bridge in the marketization of agricultural products, with the core mission of accurately conveying brand symbols to target consumers to foster recognition and purchase. Their essence lies in establishing a channel for meaningful communication and value recognition between producers and consumers, achieving a qualitative transformation from "product reach" to "identity reach."

3.3.1 Theoretical logic: from information transmission to meaning co-construction

Traditional marketing theory views promotion as a one-way process of transmitting product information from producers to consumers, with the core objective of enhancing product awareness and exposure. However, in today's era of deepening consumer society and rapidly evolving media environments, the logic of agricultural product marketing has undergone a fundamental transformation. Modern marketing is no longer merely about information dissemination but rather a value-driven dialogue process characterized by two-way interaction and co-constructed meaning between producers and consumers.

From a communication studies perspective, marketing functions as symbolic interaction that transforms geographical characteristics, production ethics, and other elements into resonant symbolic systems, with consumers serving as active interpreters of meaning. Through the lens of consumer sociology, the underlying logic of marketing lies in constructing consumer identity, where consumption behaviors embody demands for health, ecology, and culture, becoming symbolic practices for identity expression and social differentiation. In relational marketing theory, marketing ultimately aims to establish long-term trust relationships, with trust constituting the core of brand equity.

3.3.2 Paradigm shift: the evolutionary trajectory of agricultural product marketing

The evolution of agricultural product marketing paradigms demonstrates a clear trajectory: from traditional to modern approaches, from coarse to precise strategies, and from one-way communication to interactive engagement.

Traditional marketing phase. This phase was primarily conducted through wholesale markets and agricultural fairs, relying on word-of-mouth dissemination and origin credibility, with a focus on single transactions.

Mass marketing phase. With the expansion of modern retail channels, brand awareness was enhanced through standardized displays and mass media, achieving delocalization and scale expansion; however, severe homogenization occurred.

Digital marketing phase. This phase is characterized by the internet and social media, where communication exhibits networked interactivity, and marketing demonstrates features such as content-driven, socialized, scenario-based, and precision-oriented approaches.

3.3.3 Core mechanisms: the operational logic of precision outreach

In the digital marketing era, the precise targeting of agricultural product marketing and promotion is built upon the following core mechanisms.

First, user profiling and demand insights. Precision targeting is predicated on a deep understanding of target consumers. By integrating and analyzing multi-source data from e-commerce platforms, social media, membership systems, and other channels, marketing entities can construct comprehensive user profiles, enabling accurate identification and stratified operations of target demographics.

Second, content production and meaning attribution. In the era of information overload, consumers' attention has become a scarce resource. Through content formats such as short videos and live streaming, agricultural product narratives are transformed into emotionally engaging content, achieving value recognition within consumption contexts.

Third, social dissemination and trust endorsement. The rise of social media has repositioned interpersonal communication as a crucial channel for marketing. Agricultural product marketing fully leverages this characteristic by utilizing community operations, influencer collaborations, and user-generated content to embed marketing efforts within interpersonal trust networks, thereby enhancing credibility and conversion rates.

Fourth, scenario creation and experiential engagement. Agricultural product consumption is inherently tied to specific contexts—household cooking, wellness practices, holiday gifts, and family farm visits. Scenario-based marketing encompasses both online behavior-driven scenario identification and targeted information delivery, as well as offline experiential approaches such as agritourism integration, origin traceability programs, and immersive activities. These methods enable consumers to develop profound product value recognition and emotional connection through firsthand experiences.

Fifth, data closed-loop and iterative optimization. The unique advantage of digital marketing lies in its quantifiable and traceable characteristics. From exposure, clicks, and interactions to conversions, repurchases, and word-of-mouth, the entire process of consumer engagement with marketing content can be recorded and analyzed. This allows for continuous optimization of marketing strategies through testing and feedback.

3.3.4 Practical approaches: key strategies for optimizing agricultural product marketing

To address practical needs in agricultural product marketing and promotion, and by integrating the aforementioned theoretical frameworks and operational mechanisms, marketing strategies can be systematically optimized across the following dimensions.

First, strengthen content foundations and enhance narrative capabilities. Content serves as both a medium for precise audience engagement and the fundamental unit for meaning construction. Agricultural product marketing should move beyond superficial promotional tactics such as aggressive promotional marketing and adopt in-depth content storytelling. Specifically, this requires systematically exploring the natural endowments of production areas, agrarian culture, craftsmanship ethos, and ecological concepts, and transforming them into compelling brand narratives with strong communicative power. Simultaneously, by adapting to the dissemination patterns of short video and live streaming platforms, content creators should improve visual presentation quality and emotional resonance, enabling the content itself to possess self-propagating attributes.

Second, build data capabilities and enhance precise insights. The foundation of targeted outreach lies in robust data analysis capabilities. It is imperative to accelerate the digital transformation of agricultural marketing entities by establishing systematic frameworks for user data collection, analysis, and application. While respecting consumer privacy, the integration of multi-source data enables accurate profiling and tiered management of target demographics, thereby providing data-driven support for differentiated marketing strategies.

Third, integrate online and offline channels to establish multi-dimensional engagement. Modern consumers' media exposure and purchasing journeys have become increasingly complex, characterized by seamless integration of digital and physical spaces with multi-touchpoint interactions. Agricultural product marketing must move beyond single-channel reliance to build a comprehensive omnichannel network with multiple touchpoints. Online strategies should leverage synergies across e-commerce platforms, social commerce channels, content platforms, and live streaming platforms. Offline initiatives should focus on optimizing scenarios such as farm-to-supermarket partnerships, community fresh food hubs, experiential retail stores, and agritourism integration, enabling bidirectional traffic diversion and coordinated conversion between online and offline channels.

Fourth, deepen user engagement to build relationship assets. The ultimate goal of precise targeting is not to complete single transactions but to establish long-term relationships. Efforts should shift from a "traffic mindset" to a "user-centric approach," redirecting marketing focus from customer acquisition to customer retention. By implementing membership systems, community management, personalized services, and co-creation initiatives, deep connections can be established between producers and consumers, transforming one-time buyers into brand loyalists and organic advocates.

Fifth, enhance effectiveness evaluation to drive continuous optimization. Agricultural product marketing should establish a scientific evaluation framework, shifting focus from basic metrics such as exposure and click-through rates to performance indicators including conversion rates, repurchase rates, and customer lifetime value. By leveraging data-driven feedback, an agile "test-evaluate-optimize" iteration mechanism should be implemented to enable marketing

strategies to evolve dynamically in practice, thereby continuously improving the precision and effectiveness of targeted outreach.

3.4 Regional Brand Pathway

3.4.1 Brand building logic: from homogeneous competition to heterogeneous differentiation

Agricultural products exhibit strong physical homogeneity. As the market transitions from seller-dominated to buyer-driven dynamics, over-reliance on product competition risks triggering intense price competition. Brands serve as the core mechanism for differentiated competition through a dual logic. From an institutional economics perspective, brands act as trust-embedded mechanisms that reduce transaction costs through quality commitments and traceability. From a semiotic perspective, brands function as meaning-encoding systems that transform agricultural products from mere commodities into symbols embodying lifestyles and identities. Brand building facilitates a strategic shift from price competition to value competition, constituting the fundamental source of brand premium.

3.4.2 Mechanism construction: multidimensional generation of agricultural product brand symbols

Agricultural product brands are rooted in natural endowments and production methods, exhibiting distinct regional characteristics. Their heterogeneity is structured through three dimensions:

1) Geographical Indications (GIs): The Institutionalized Expression of Natural Endowments. As the most distinctive symbolic form in agricultural branding, GIs establish a deep connection between product quality and specific regional natural factors (soil, climate, water sources) as well as cultural elements (traditional craftsmanship, farming expertise) through the "origin + product" naming system. Through institutionalized certification and protection mechanisms, GIs create a "brand moat" for production areas, granting legally recognized exclusivity and market scarcity to agricultural products from particular regions.

2) Cultural Narration: The Significance of Historical Inheritance. Another crucial source of agricultural product brand symbols lies in the cultural exploration and narrative reconstruction of the origin's history, agrarian civilization, and traditional craftsmanship. By uncovering these elements and telling "local lore stories," products are endowed with emotional and aesthetic value, thereby distinguishing them from industrialized products.

3) Quality Commitment: Continuous Construction of Trust Systems. The foundation of brand symbols lies in the credibility and stability of quality. Another mechanism for agricultural product brand building involves transforming implicit quality into explicit trust credentials through standardized production, full-process traceability, and third-party certification, thereby forming the "trust anchor point" of brand symbols.

These three construction mechanisms are interwoven and mutually supportive, collectively forming the core framework of the agricultural product brand symbol system.

3.4.3 Practical forms: interactive symbiosis between regional brands and corporate brands

In the practice of agricultural product branding, two types of brand forms coexist and interact: regional public brands and corporate independent brands.

A regional public brand is a shared brand utilized by producers within a specific geographic area. Its key advantage lies in rapidly creating market recognition through economies of scale, leveraging the overall reputation of the production region to drive collective premium pricing for local products. However, such brands also face the potential risk of the "tragedy of the commons"—when brand reputation becomes a shared resource, opportunistic practices by individual producers (such as passing off inferior goods as premium products or selling counterfeit items) may damage the brand's credibility, leading to a vicious cycle where "bad money drives out good."

A corporate independent brand refers to a privately owned brand independently established, owned, and operated by specific agricultural enterprises or cooperatives. The emergence of corporate independent brands signifies a shift in agricultural operators from relying on collective brands in a free-rider manner to engaging in differentiated competition through self-created brands.

Two-way brand synergy: Regional brands provide credibility endorsement for corporate brands, while outstanding corporate brands reinforce regional brand value, jointly forming the core driving force of the brand ecosystem.

3.4.4 Path optimization: a deep-level approach to agricultural product brand building

Although China has achieved remarkable progress in agricultural product branding, it still faces several deep-rooted challenges: regional public brands suffer from "overemphasis on registration but neglect of operation," corporate brands exhibit "numerous but weak identities and large-scale yet lackluster competitiveness," prominent brand homogenization, superficial cultural exploration, and inadequate brand protection and regulatory oversight. To optimize the branding strategy for agricultural products, efforts should focus on the following aspects.

1) Strengthen Quality Foundations and Build Brand Trust. The essence of a brand lies in trust, which is rooted in quality. Agricultural product branding must prioritize standardized production practices, quality control measures, and traceability system development. Only by establishing a stable, reliable, and verifiable quality assurance framework can brand symbols achieve lasting vitality. In this process, it is crucial to leverage the leadership of modern agricultural entities. Through organized and scaled production methods, quality instability issues caused by fragmented operations among small-scale farmers can be addressed.

2) Deepen Cultural Exploration to Highlight Symbolic Distinctions. The uniqueness of agricultural product brands ultimately stems from their distinctive cultural essence. It is essential to thoroughly examine regional history, farming traditions, traditional craftsmanship, and ecological philosophies, systematically transforming these elements into compelling brand narratives and visual symbols. Generic packaging that lacks depth should be avoided, with efforts

instead focused on uncovering the unique cultural DNA embedded in heritage roots. This approach ensures each agricultural brand becomes a vibrant embodiment of its local culture and agrarian civilization.

iii.Establish Collaborative Mechanisms to Balance Public and Private Interests. Regarding the relationship between regional public brands and corporate independent brands, a governance framework with clear responsibilities and collaborative governance should be established. The management entities of regional public brands must strengthen quality supervision, brand licensing, and reputation maintenance to prevent the "tragedy of the commons." Simultaneously, a favorable ecosystem should be created for the growth of corporate independent brands, encouraging enterprises to develop sub-brands or proprietary brands within the regional brand framework, thereby fostering a virtuous cycle of parent-child brand synergy.

3) Strengthen Legal Safeguards to Purify the Market Environment. The value of agricultural product brands is highly dependent on standardized market order. It is essential to enhance trademark protection and regulatory enforcement for geographical indications and well-known agricultural brands, rigorously combat counterfeit products and trademark infringements, and safeguard the legitimate rights of brand owners and consumers. Simultaneously, brand evaluation and exit mechanisms for agricultural products should be improved, and dynamic management systems should be established to ensure the authenticity and authority of brand symbols.

The essence of agricultural product brand building lies in achieving differentiated value enhancement through institutional empowerment via geographical indications, symbolic reconstruction through cultural narratives, and systematic cultivation of quality trust. Brands have become core strategic assets determining market positioning and value acquisition capabilities. Only through systematic brand development can the historic transition from "selling products" to "selling brands" be accomplished.

3.5 Industrial Chain Extension Path: Deepening Value Creation

Industrial chain extension represents a strategic leap in agricultural product marketization from "broad expansion" to "in-depth exploration." Its essence lies in systematically manifesting and capitalizing on ecological, cultural, experiential, and service value systems by breaking down agricultural industry boundaries, thereby achieving profound value creation and multiplier effects.

3.5.1 Theoretical logic: from linear chain to value network

The theoretical foundation of industrial chain extension can be explained from three dimensions: industrial economics, value chain theory, and the new development concept.

From an industrial economics perspective, industrial chain extension refers to agriculture's vertical expansion upstream and downstream and horizontal integration with related industries. This process enables agricultural operators to transcend "value lowlands" and restructure internal value distribution patterns within the industrial chain. Analyzed through value chain theory, it drives agricultural entities to ascend along the "smile curve" toward R&D design and brand marketing, achieving systematic value enhancement. From the perspective of the new development paradigm, industrial chain extension transforms agricultural multifunctional roles—including ecological conservation, cultural heritage preservation, and leisure wellness—from "implicit existence" into "explicit value," thereby expanding agricultural value creation boundaries.

3.5.2 Extension dimensions: threefold expansion in vertical, horizontal, and spatial dimensions

The extension of agricultural product value chains is not a linear progression in a single dimension but rather a systematic expansion across three dimensions: vertical, horizontal, and spatial, with these dimensions interwoven and evolving synergistically.

1) Vertical Extension: Ascending to Both Ends of the Value Chain. Upstream extension involves seed industry R&D and agricultural input services to secure source advantages; downstream extension encompasses deep processing and brand marketing to achieve value-added processing and brand premium. The key lies in "deepening"—achieving stepwise leaps from "selling raw materials" to "selling products" and "selling brands."

2) Horizontal Extension: Cross-Border Integration into Related Industries. The core philosophy of horizontal expansion lies in deeply integrating agricultural production processes, environments, and outcomes with industries such as tourism, culture, education, wellness, and creativity to create innovative product formats and service experiences. This approach fosters composite business models including "agriculture + tourism," "agriculture + culture," "agriculture + wellness," "agriculture + education," and "agriculture + digital technologies." The key lies in "expanding scope"—by adding diverse derivative functions to build a multi-sector collaborative industrial ecosystem.

3) Spatial Extension: Expanding Through Regional Resource Integration. By adopting spatial configurations such as modern agricultural industrial parks, industrial clusters, and industry-driven towns, the aggregation and coordinated development of production factors can be achieved, thereby reducing the extension costs and risks for individual operating entities.

3.5.3 Driving mechanisms: factors influencing industrial chain extension

The extension of agricultural product supply chains is not a spontaneous evolutionary process but rather a systemic transformation driven by multiple dynamic factors.

1) The Catalytic Role of Technological Innovation. Technological progress serves as the core driving force for industrial chain extension. Breakthroughs in deep processing, digital technology, and biotechnology lower the entry barriers and expand the scope of extension.

2) The Driving Force of Consumption Upgrading. With rising household incomes and shifting consumption patterns, consumer demand for agricultural products has evolved from basic "satisfaction" to premium "quality," "health-focused," "cultural," and "experience-oriented" consumption. The growing trends of diversified, personalized, and quality-driven consumption patterns have created vast market opportunities for agriculture to expand into sectors such as value-added processing, cultural and creative experiences, and health services.
3) The Proactive Role of Entity Growth. The emergence of new agricultural business entities serves as the organizational foundation for industrial chain extension. Unlike traditional small-scale farmers, new business entities such as agricultural leading enterprises, farmers' professional cooperatives, family farms, and industrial consortia possess stronger capabilities in resource integration, market expansion, and risk mitigation.
4) The Guiding Role of Policy Support. Government policies play a pivotal role in steering and catalyzing industrial chain expansion. At the industrial policy level, national-level rural development initiatives provide strategic guidance and resource allocation for supply chain extension. Regarding factor policies, optimized measures including land use guarantees, financial support, and talent recruitment have reduced institutional costs and resource constraints. In terms of infrastructure, advancements in public facilities such as cold chain logistics networks, e-commerce platforms, and industrial support systems have created essential foundations for industrial chain development.

3.5.4 Path optimization: practical approaches to industrial chain extension

To address practical needs for extending agricultural product supply chains, extension pathways can be systematically optimized across the following dimensions, integrating the aforementioned theoretical frameworks and driving mechanisms.
1) Strengthen Technological Support to Enhance Industrial Chain Extension Capabilities. The depth of industrial chain extension is determined by innovation capacity. Increased R&D investment should be directed toward key areas including advanced agricultural processing technologies, by-product utilization systems, functional ingredient extraction methods, and digital-intelligent solutions to overcome technical bottlenecks hindering industrial chain expansion. Concurrently, establishing robust industry-academia-research collaborative innovation mechanisms will facilitate the commercialization of scientific achievements, transforming technological innovation advantages into competitive edges for industrial chain development.
2) Cultivate Diverse Stakeholders to Enhance Organizational Dynamism. Extending industrial chains requires business entities with strategic vision and integration capabilities. Priority should be given to nurturing agricultural industrialization leaders, encouraging them to consolidate supply chain resources through mergers, acquisitions, and strategic alliances to build comprehensive operational capabilities across the entire value chain. Farmers' cooperatives and family farms should be supported in expanding into processing and sales segments while maintaining specialization, establishing an integrated "production + processing + sales" model. Innovative organizational forms such as agricultural industrialization consortia should be explored, leveraging division of labor and shared interests to engage small-scale farmers in industrial chain expansion processes.
3) Deepen Integrated Development to Expand Value Space. The core of industrial chain extension lies in cross-sector integration. Deep integration between agriculture and industries such as tourism, culture, education, healthcare, and sports should be promoted, developing diversified and multi-level integrated business models. In terms of integration approaches, it is essential to support both "full industrial chain" integration led by leading enterprises and encourage compound integration models such as "agriculture + multi-sector operations." Regarding integration depth, efforts should evolve from superficial "physical layering" to profound "chemical reactions," achieving functional complementarity, value co-creation, and shared benefits.
4) Optimize Spatial Layout to Build Industrial Clusters. Industrial chain extension requires suitable spatial infrastructure. Leveraging local resource endowments and industrial foundations, modern agricultural parks, industrial hub towns, and industrial clusters should be strategically developed. This approach promotes spatial clustering of upstream and downstream enterprises, fostering an ecosystem characterized by division of labor, resource sharing, and collaborative innovation. Cluster-based development reduces individual enterprises' expansion costs while enhancing the overall competitiveness and risk resilience of industrial chains.
5) Strengthen Interest Linkages to Ensure Inclusive Development. The ultimate goal of industrial chain extension should be to boost farmers' income and rural development. It is essential to establish robust interest linkage mechanisms through diversified approaches such as contract farming, equity partnerships, profit-sharing schemes, and service-driven models, enabling small-scale farmers to benefit from value-added gains. Concurrently, emphasis must be placed on the employment multiplier effect of industrial chain extension by creating more local job opportunities, thereby transforming it into a powerful engine for farmers' prosperity and comprehensive rural revitalization.

4 MARKET-ORIENTED PATH GUARANTEE MECHANISMS FOR VALUE REALIZATION OF AGROECOLOGICAL PRODUCTS IN GUANGDONG PROVINCE

4.1 Policy Support Mechanism

In alignment with national initiatives such as the Green Consumption Promotion Action, the "Green and Beautiful Guangdong" ecological development program, Guangdong's food industry cultivation policies, and the "Hundred-Thousand Project," comprehensive strategies should be advanced under the framework of prioritizing ecological conservation and green development. Through multi-dimensional measures—including establishing

mechanisms for realizing ecological product value, enhancing technological innovation support, improving standardization systems, fostering business entities, strengthening resource allocation guarantees, refining risk prevention mechanisms, and deepening the integration of agriculture, culture, and tourism—efforts should be made to transform pristine landscapes into "green capital" and drive high-quality development of Guangdong's agroecological products.

4.2 Technological Support Mechanism

Platforms for ecological agricultural technology research, demonstration, and promotion should be established to enhance the supply of technologies such as green pest control, organic fertilizer application, and germplasm resource conservation and improvement. Digital and intelligent production should be advanced by constructing smart agricultural bases and digital traceability systems. Agricultural technology training should be strengthened to improve the technical proficiency of farmers and agricultural operators.

4.3 Quality Supervision Mechanism

The certification supervision system for green, organic, and geographical indication products should be improved, with strengthened sampling inspections throughout production, processing, and distribution processes. The quality traceability and credit evaluation system should be refined, and joint disciplinary measures for dishonesty should be implemented. Environmental monitoring at production sites should be enhanced to ensure the safety and quality of agroecological products.

4.4 Farmer Linkage Mechanism

Guaranteed purchase agreements between enterprises and farmers, profit-sharing based on equity participation, and profit return mechanisms should be established to facilitate smallholder farmers' integration into the industrial chain. Farmer skill training and employment promotion should be strengthened to enable farmers to share value-added benefits from the industrial chain. Cooperative service capabilities should be enhanced to improve farmers' organizational level and market bargaining power.

4.5 Factor Support Mechanism

Financial support should be strengthened by developing specialized credit products for ecological agriculture and agricultural insurance to alleviate financing difficulties. Interdisciplinary talents in agricultural technology, brand operations, e-commerce marketing, and food processing should be introduced and cultivated. A cross-departmental collaborative mechanism should be established to integrate resources from agriculture, market regulation, culture and tourism, commerce, and finance sectors, thereby forming a synergistic working force.

4.6 Market Service Mechanism

Regular production-sales matching platforms, brand exhibition platforms, and e-commerce service platforms should be established. Professional and socialized services including brand planning, packaging design, channel expansion, and marketing promotion should be provided. Industry associations and intermediary service institutions should be fostered to support the standardized market-oriented development of the industry.

5 CONCLUSION

The essence of agricultural product supply chain extension lies in achieving deepened value creation and systemic advancement. This process drives profound transformations through vertical expansion toward value chain integration, horizontal integration with related industries, and spatial expansion via regional resource consolidation. It propels agriculture from primary production to full industrial chain operations, from single-function models to multifunctional systems, and from low-value-added to high-value-added products. Against the backdrop of advancing rural revitalization strategies, supply chain extension has become a critical pathway for promoting high-quality agricultural development, enhancing comprehensive agricultural benefits, and diversifying farmers' income sources. Only by thoroughly understanding the theoretical logic and driving mechanisms of supply chain extension, and systematically implementing key measures including technological innovation, entity cultivation, integrated development, spatial optimization, and interest linkages, can multiplier effects in agricultural value creation be truly achieved and sustained momentum be injected into the modernization of agriculture and rural areas.

COMPETING INTERESTS

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