

Research on the competitive advantage of Wuchang rice under the concept of product marketing

Chen Yingting^{1,a}, Zhong Ermei^{2,b,*}, Zhang Yani^{3,c}, Chen Xiaojun⁴, Li Jiaying⁵, Gong Xiongyan⁶, Zhong Zetong⁷

¹School of Economic, Guangzhou City University of Technology, Guangzhou, China

²School of Economic, Guangzhou City University of Technology, Guangzhou, China

³School of Management, Guangzhou City University of Technology, Guangzhou, China

⁴School of Computing, Guangzhou City University of Technology, Guangzhou, China

⁵School of Management, Guangzhou City University of Technology, Guangzhou, China

⁶School of Foreign Languages, Guangzhou City University of Technology, Guangzhou, China

⁷School of Economic, Guangzhou City University of Technology, Guangzhou, China

^ayitingcandd@qq.com, ^bzhongem@gcu.edu.cn, ^c2337431517@qq.com

*Corresponding author

Abstract: As a big country in grain production, China has a variety of rice brands, among which people are familiar with Wuchang rice. Wuchang City is a typical agricultural county (city), an important commodity grain base of the country, one of the top ten advanced counties of national grain production, and one of the top five counties of national rice. The high-quality natural resources of Wuchang City give Wuchang rice a unique quality. Today, 'Wuchang Rice' has become a rice product with five laurels of China Geographical Indications Protection Products', certificate of Origin Trademark', Hina F Famous Brand Products', Hina F Famous Brand Agricultural Products', and China Famous Trademarks', with only one Wuchang in the country. Firstly, through a large amount of literature and official data collection, this paper briefly reviews the existing literature research on the development status and brand competitiveness of Wuchang rice at home and abroad and clarifies the main concepts, such as brand competitiveness of Wuchang rice, and the main theories, such as brand marketing and competitive advantage, so as to establish a basis for studying the marketing strategies that affect the brand competitiveness of Wuchang rice. Secondly, through questionnaire analysis, field research, and access to relevant information, the development status and existing problems of the Wuchang rice brand are analyzed. Combined with marketing concepts based on consumer purchase behavior, the competitive advantages of Wuchang rice are analyzed from the four dimensions of the 4P theory. Starting from the quality, price, and brand strategy advantages of Wuchang rice, the competitive advantages of Wuchang rice are summarized. Furthermore, the successful experience of Wuchang Rice in marketing and brand building is discussed in depth. According to the analysis results, relevant constructive suggestions are put forward for the development of the strategic advantages of Wuchang rice.

Keywords: Wuchang Rice, Competitive Advantage, Marketing Policy

1. Introduction

1.1. Research Background

In recent years, China's rice production has shown a fluctuating downward trend; on the contrary, consumption has increased year by year. According to USDA, China's rice production and consumption in 2021-2022 were 149 million tons and 156 million tons, up 0.47 percent and 4 percent year on year, respectively, according to USDA. At the same time, in 2020-2021, China ranked first in the national distribution of global rice imports with 4,921 thousand tons, accounting for 9.53% of the total imports. China's rice market has considerable prospects.

However, with the improvement of people's requirements for quality of life, people also pay more and more attention to health and nutrition. In the context of food safety and consumption upgrading, people's demand for high-quality rice and brand rice will continue to increase. As one of the representatives of high-quality rice in China, Wuchang rice has a superior planting environment and

scientific planting technology, so Wuchang rice, as a regional brand, also has strong market competitiveness in the market. However, because the "Wuchang rice" is very sought after by people, other counterfeiters salivate repeatedly when "Li ghost" poses. According to Yi Yancheng, director of the Wuchang Bureau of Agriculture in Heilongjiang Province, the annual output of real Wuchang rice is only about 650,000 tons, but the annual sale of Wuchang rice in the national market reaches 10 million tons, which means more than 90 percent of the fake "Wuchang rice" in the market.

In order to further improve the competitiveness of their own brand in the market, "flow" into "retention," and better seize market share, each Wuchang rice brand also needs to constantly optimize their own products and marketing strategies so as to improve the competitive advantage of the brand in the Wuchang rice market. Therefore, this study is based on the root theory, starting from the product marketing concept, using the theory of 4p: rice quality and taste advantage, health and nutrition advantages, origin, brand security, price and price advantage, analyzing its performance in the market, and then digging and exploring the rice do well in marketing and brand construction and how to do better, and on the basis of the competitive advantage of other rice brand products to provide corresponding references and references.

1.2. Study purpose and significance

1.2.1. Study Purpose

Wuchang, with its unique geographical environment and developed agricultural resources, is one of the top five rice cities in China. The special geographical environment determines that it is not only an important commodity grain producing area in China but also the main producing area of green agricultural products. The p5 rice is the gold card of the city; it is the city's rich industry and one of the outstanding advantages of agricultural products. But overall, the p5 rice has high visibility and brand value rises, but still, by the impact of all kinds of rice brands, the main reason is that the p5 rice did not form their own marketing characteristics, making consumers unable to accurately identify in many rice brands. An appropriate marketing strategy can attract consumers and develop into p5 rice loyal customers. Therefore, based on the consumer purchase behavior analysis of the p5 rice marketing strategy, optimization has both theoretical and practical significance. In this paper, the p-5 rice is used as a research object based on the consumer purchase behavior of the p-5 rice marketing, using the root theory to find the rice in the process of marketing factors, using the cross-difference analysis method to analyze the questionnaire, interview, and put forward relevant optimization suggestions in order to promote the p-5 rice agricultural economic development.

1.3. Study Methods

1.3.1. Questionnaire survey method

A questionnaire survey is a research method for collecting data by asking written questions. The researcher will compile the questions into a question form and answer them by mail, face-to-face or tracking visit so as to understand the subjects' views and opinions on a certain phenomenon or problem. This is also called the question form method. The key to the application of the questionnaire method lies in compiling questionnaires, selecting the subjects, and analyzing the results.

This survey mainly distributed questionnaires on the sales of Wuchang rice. Offline, questionnaires are distributed through field research, and data is collected from merchants with different identities, such as wholesale stores, supermarkets, and grain and oil stores in farmers' markets, by setting jump questions online. Through the above methods, a total of 112 questionnaires and 101 valid questionnaires were collected, and the effective recovery rate was 90%. The main purpose of the survey is to understand the sales situation and popularity of Wuchang rice at different sales points so as to obtain information about consumers' consumption behavior and consumption psychology for Wuchang rice.

1.3.2. Field survey method

Within the scope of communication research, the relationship and influence between the media and the recipient. The purpose of the field investigation is not only to find the facts but also to make the investigation through systematic design and theoretical discussion, to form hypotheses, and then to use scientific methods to verify them in the field and to form new inferences or hypotheses.

After a preliminary understanding of the general development of Wuchang rice in each district of

Guangzhou, the project began to conduct offline field research. Go deep into the large sales points in each district, investigate the Wuchang rice brand, investigate the types and prices of Wuchang rice in the main sales, grasp the diversity of Wuchang rice brand resources in different places and the location information on the shelves, and finally integrate the information to find out the different selling points and their sales differences.

1.3.3. In-depth interview method

An in-depth interview is a one-to-one conversation on a particular topic. It is mainly used to collect the views of the respondents or the reasons for making a decision, to understand how the individual consumer makes the purchase decision, how the product or service is used, and the emotions and personal tendencies of the consumer in life.

This study starts with merchants and consumers who buy Wuchang rice and mainly conducts one-to-one interviews based on their views on the taste, quality, location, promotion methods, and purchase reasons of Wuchang rice. By integrating the ideas of merchants and consumers, we can have a deeper understanding of their views on Wuchang rice marketing and promotion methods, finally obtain more effective information, and provide reference significance for the development of other rice marketing means.

2. Theoretical basis and research summary

2.1. 4P theory

In his book *Marketing* (first edition, published around 1960), Professor Jerry McCarthy first put forward the 4P theory from the perspective of enterprises, namely Product, Price Place, and Promotion. A product is anything that can be offered to the market to be used and consumed by people and meet a need, including tangible products, services, people, organizations, ideas, or combinations of them. Price refers to the price when the customer buys the product, including discount, payment period, etc. Price or price decision, is related to the enterprise's profit, cost compensation, and whether it is conducive to product sales, promotion, and other issues. The channel refers to the sum of all links and driving forces experienced in the whole process of transferring goods from production enterprises to consumers. Promotion refers to a series of marketing behaviors such as brand publicity (advertising), public relations, and promotion.

Product strategy. According to the market demand and user feedback, launch products that meet the market trend and user needs.

Price strategy. According to the market demand and the pricing strategy of competitors, formulate the corresponding price strategy to obtain the maximum profit and market share.

Channel strategy. According to the user's purchasing habits and market demand, formulate the corresponding channel strategy to meet the user's purchasing demand.

Promotional strategy. According to market competition and user needs, formulate corresponding promotion strategies to increase product visibility and sales.

2.2. Research status at home and abroad

2.2.1. For the government

Yu Guoping, Xu Chunchun, et al. (2020) ^[1] Based on the key links, implementation paths, and future development trends of the supply-side reform strategy, they adopted the method of literature analysis and investigation and research to summarize the basic balance between supply and demand of rice in China, the pressure of destocking, the coexistence of insufficient effective supply of rice and structural oversupply, and other problems. By comparing the policies of Japan, Thailand, and China on the five-permanent rice, The government, which plays a leading position in the whole industrial chain, puts forward three suggestions to accelerate the improvement of the rice industry, promote the integrated development of the industry, promote the adjustment of the industrial structure by the project, enhance the support capacity of science and technology, optimize the development layout of the rice industry, and scientifically allocate the resource elements. Huaxin S, Baiyi L et al. (2020) ^[2] Based on the analytic hierarchy process (AHP), entropy weight method (AHP-EWM), and artificial neural network (ANN), conducted a quantitative assessment of the fraud vulnerability of China's Wuchang

rice industry and concluded that the Wuchang rice industry chain was extremely vulnerable to fraud. It also suggested that the government, which dominates the five-member rice industry chain, improve regulations and policies and increase penalties to reduce fraud loopholes.

2.2.2. For businesses and industry associations, farmers, and digital technology platforms

Zeng Weijiong and Xu Licheng (2014) ^[3] took Wuchang rice as a representative of high-end agricultural products and made an empirical analysis on the cost-benefit of each link of Wuchang rice industry chain based on the data obtained from questionnaire and interview surveys of rice farmers, cooperatives and rice processors in Anjia and Dujia towns in Wuchang City. This paper summarizes three problems, namely, the low degree of farmer organization, information asymmetry, brand effect, and the mutual separation of interests of each link, and puts forward relevant suggestions, that is, farmers should increase support for rural cooperatives, the government should improve agricultural quality inspection and system and use digital technology platforms to reduce the degree of information asymmetry, and enterprises should invest in agricultural production as the main body.

2.2.3. For consumers

Achara B, Baichen J, et al. (2023) ^[4] made a relevant study. They used the discrete choice experiment method to construct a mixed Logit model (MXL) to calculate the WTP of Chinese and Thai consumers' willingness to pay for high-quality rice attributes. The conclusions are as follows: For rice, consumers in both countries prefer green and organic certified labels, and Chinese consumers prefer green organic certified rice more than Thai consumers; Thai consumers are more willing to consume rice with brand labels than Chinese consumers, while Chinese consumers are more willing to consume rice with traceability labels than Thai consumers. Trust, income, and age were the factors associated with consumer preference for certified rice in both countries. Through the conclusions drawn, the authors suggest the need for relevant stakeholders to adopt brand labels, with traceability and certification labels, in the rice value chain.

3. Current situation analysis

3.1. Development course of Wuchang Rice brand

Wuchang City put forward the green strategic slogan in 1993, taking the lead in raising the "banner" of rice and establishing a green food brand. In October 1994, the national green food mark was used. In 1995, it became one of the only seven rice brands in China, and it is also the only Chinese brand rice product in the city. In 1999, Wuchang City established the rice association and the large-scale industrialization leader—the green quality development group. In 2001, Wuchang City began to consciously integrate rice resources and brands, registered trademarks, and officially pushed the Wuchang rice brand down the road of orderly construction.

Due to the low degree of marketization, the Wuchang rice brand, in its early stages of development, was once faced with a disorder of circulation. Given the above problems, the Wuchang Municipal Party Committee and the municipal government continue to launch various measures to rectify, standardize, and protect the Wuchang rice geographical indication brand. In 2003, Wuchang rice was protected by the region of origin, and Wuchang City formulated and revised the standard of "geographical standard product Wuchang Rice" twice. In May 2018, Wuchang City formulated and issued the "Wuchang Rice Standard System," further maintaining the regional logo of Wuchang Rice. At the same time, the Wuchang municipal party committee and municipal government also issued "the P-5 rice brand construction and protection work plan," the Wuchang rice traceability anti-counterfeiting management regulations, "the Wuchang rice certificate trademark authorization use management method," and a series of clear specifications for the Wuchang rice certification trademark authorization, practical supervision, and management.

Under the promotion of the government and enterprises, the brand value of Wuchang rice has gradually increased. Not only have they won the five titles of "Chinese geographical indication protection products," "Certificate of Origin trademark," "Famous Brand Products of China," "Chinese Famous Agricultural Products," and "Chinese Famous Trademark" successively, according to the Chinese Brand Building Promotion Association, according to the Chinese brand value evaluation information in 2023, the brand value of Wuchang rice is also rising, ranking among the top 100 regional brand geographical indication products with 71.31 billion yuan, ranking first in the landmark rice product category for 8 consecutive years.

3.2. Development status of Wuchang Rice brand

3.2.1. Status quo of industrial development

1) Rice production in Wuchang City has gradually become a large-scale one.

In 2022, the grain output of Wuchang City reached 3.85 billion catty, with a year-on-year growth of 2%. It is an important national commodity grain base and one of the "top five" counties in rice production in China.

2) The industrial chain agglomeration effect of Wuchang City is prominent.

By 2021, the city will have more than 3,000 professional farmer cooperative organizations and 293 rice processing enterprises, with an annual processing capacity of 5.5 million tons (10 over 50,000 tons and 132 between 10,000 tons and 50,000 tons). Among them, there are 31 leading enterprises, including 1 national leading enterprise and 6 provincial leading enterprises. The rice processing enterprises all use automatic assembly line operation, and the intelligent and automatic equipment reaches more than 80%. By 2023, there will be more than 9,300 registered online shops in the city, with a year-on-year increase of 42%, driving more than 21,000 jobs and creating e-commerce transactions exceeding 5 billion yuan.

3.2.2. Status of operation and management

1) The industrial upgrading project has been implemented, and the area of high-standard rice cultivation has been continuously expanded.

In 2017, Wuchang City established a rice seed base to achieve full coverage of improved varieties; according to the overall plan of the national modern agricultural industrial park, the construction of 450,000 m² of rice core area was comprehensively promoted, the whole process of rice production was intelligent and precise controlled, and the construction standard of the rice base was further improved.

2) Strictly control fertilization technology and promote ecological planting.

Wuchang city is fully implementing "three with three needs" (with organic fertilizer without chemical fertilizer, biological agents without pesticides, paper film cover, and artificial weeding without herbicide), indigenous farming, duck rice for ecological organic planting mode, promoting rice mulching, new fertilizer, fly-again plant protection technology, soil testing formula fertilization, rice "three minus" achieving full area coverage, and the city's paddy field soil organic matter content above 4%.

3) Build an Internet of Things center to promote the development of smart agriculture.

In 2018, Wuchang City established the "Wuchang Agricultural Internet of Things Service Center," promoting new technologies and services such as intelligent water-saving irrigation, factory-centralized seedling breeding, intelligent machinery production, big data, and agricultural socialization services. The role of modern technology in promoting and improving the Wuchang rice industry has gradually emerged.

4) The government continued to invest and achieved remarkable results in marketing and promotion.

The Wuchang government invests a minimum special fund of 4 million yuan every year, organizes traceability certification enterprises to participate in various fairs, and carries out various activities such as the "Wuchang Rice Festival" and "Rice Auction" to promote "Wuchang Rice" products. In 2023, the government invested 13 million yuan to build a digital platform called "Tracing China: Rice Township Wuchang" in cooperation with Xinhuanet. 120 million yuan was invested to build 100,000 mu of high-standard farmland and 180,000 mu of the national green rice standardized production base.

3.3. Market prospect analysis of Wuchang rice brand

Wuchang rice, as a well-known brand, has a good market prospect in China's rice market. As one of the main staple foods of the Chinese people, rice has a stable market demand. Despite the slowdown, growing concern for healthy and organic foods is providing an opportunity for demand for high-quality rice. Wuchang rice in the market, with its high quality and good reputation, has competitive advantages and can attract more and more consumers.

As consumers pay more attention to food safety and quality, Wuchang Rice can further expand its

product line to meet the needs of different consumers, thus increasing the brand benefit. For example, the production of polished rice, selenium-rich rice, baby-eating rice, and other high-value-added products will provide more choices for consumers. In addition, the implementation of the points system, the increase in after-sales service, and other measures can increase customers' recognition and loyalty to the brand. Through these strategies, Wuchang Rice can continue to expand its market share and improve its brand awareness.

With the help of the Internet and e-commerce development, Wuchang Rice can further enhance the market prospects of the brand. By opening flagship stores and establishing official websites on major e-commerce platforms, more convenient purchase channels can be provided, and consumers' understanding and trust can be increased by introducing detailed product advantages and regional features. At the same time, social media platforms such as TikTok and WeChat official accounts can be used to carry out brand publicity and interactive marketing to attract more potential customers and strengthen relationships with consumers. By making full use of the advantages of the Internet, Wuchang Rice can further expand its market share and improve its brand awareness to obtain a better development prospect in the highly competitive rice market.

According to the actual investigation and summary, we find that the current prospect of Wuchang rice has several aspects:

1) Healthy food trend: With people's increasing attention to healthy diets, Wuchang rice has a good market prospect. As one of the staple foods, rice plays an important role in people's daily diet. Wuchang rice, with its high quality, safety, and rich nutrition, meets consumers' demand for healthy food. With the improvement of health awareness, Wuchang rice is expected to gain a larger market share in the health food market.

2) Regional advantages and brand recognition: Wuchang rice originated in Wuchang City, Heilongjiang Province, China, and this region is known for its fertile black soil and unique climatic conditions. This regional advantage gives Wuchang rice a unique taste and quality. Wuchang rice, as a well-known brand, has established good brand recognition in the market. This regional advantage and brand recognition will help Wuchang Rice gain more opportunities and competitive advantages in the market.

3) Diversified product lines: consumers' demand for rice is becoming more diversified. In addition to traditional white rice, consumer demand for specialty rice such as organic rice, selenium-rich rice, and black rice is also increasing. Wuchang Rice can meet consumer demand by providing diversified product lines and further expanding its market share.

4) Domestic market potential: China is one of the world's largest rice producers and consumers and has huge market potential. Wuchang rice, as one of the most famous traditional Chinese specialties, has the potential to gain a greater share in the domestic market. Through the optimization of marketing strategy, channel expansion, and brand promotion, Wuchang Rice can further enhance its competitiveness in the domestic market.

5) International market expansion: With the increasing international interest in Chinese food, Wuchang Rice can consider expanding to the international market. Chinese rice enjoys a high reputation in the global market, and Wuchang rice, as a product with unique quality and regional characteristics, is attractive. By adapting to the demand of the international market, establishing an appropriate distribution network, and strengthening brand promotion, Wuchang Rice is expected to gain more opportunities in the international market.

6) Brand building and marketing strategy: Successful brand building and marketing strategy are crucial to the market prospects of Wuchang Rice. By creating a unique brand image and implementing differentiated marketing strategies, such as combining online and offline marketing activities, social media publicity, etc., Wuchang Rice can enhance its brand awareness and market competitiveness.

3.4. Problems exist in the development of Wuchang rice brand

With the continuous promotion of the marketization process of agricultural products in China, the brand awareness of China's agricultural producers and operators and the degree of consumers' recognition of the brand have also been effectively improved. Wuchang Rice has also made great progress in the brand integration of its established regional brand. However, according to the reality of offline interviews and online integration, we find that the development of the Wuchang Rice brand mainly has the following problems:

1) There is a lack of brand awareness, and the brand-building and promotion work needs to be improved. Although the Wuchang rice market transaction is very active, most people do not understand the two certification trademarks of Wuchang rice. The cognition of "Wuchang rice" is more "Wuchang rice production" than a public brand.

2) Trademark infringement is serious, and the supervision of brand use and property rights protection still needs strengthening. As a regional brand, Wuchang rice has a strong public image. To promote their development, some small and medium-sized enterprises in the region will inevitably selectively use the public brand of Wuchang rice. However, due to the lack of compliance awareness of such brands, the brand value of Wuchang rice is randomly used arbitrarily, making the good and bad Wuchang rice products on the market uneven, leading to chaos in the industry market competition.

3) Vague brand positioning. The Wuchang rice regional brand mainly depends on the resource advantage of regional creation. Because it rarely targets market segmentation, different product levels in the same brand are unclear, making the brand positioning fuzzy.

4) The brand reputation crisis is serious. With the improvement of the brand reputation and popularity of Wuchang rice, the phenomenon of fake and shoddy brands is more serious, and it is difficult for people to buy real Wuchang rice, which makes the credit crisis of the Wuchang rice brand increasingly serious.

4. Conclusion and suggestion

For a long time, despite the fierce competition in the rice industry, the Wuchang rice industry still has an unshakable place in the market. According to the sales situation of the Wuchang rice industry in different regions and combined with online and offline interview data, this paper finds that the success of Wuchang rice is mainly reflected in five aspects: product research and development, sales channels, promotional activities, brand building, and brand price. To sum up, the unique brand characteristics and value of Wuchang rice can be further shaped through the differentiated research on Wuchang rice, the implementation of deep positioning and personalized marketing strategies, as well as the improvement of production and sales efficiency.

4.1. Implement differentiated research

The successful sales of Wuchang rice cannot be separated from the differentiated research of the Wuchang rice industry. In this regard, the research focuses on exploring the formation mechanism of the differentiation advantage of Wuchang rice, including product research and development, production process, supply chain management, and other factors, and puts forward specific implementation strategies. Through in-depth market research and insight into consumer needs, existing products can be improved and innovated to meet the ever-diversified consumer needs. At the same time, through the promotion of category innovation and brand positioning, it can also improve the popularity of Wuchang rice and consumers' purchase willingness. Therefore, the research focus on the formation of Wuchang rice differentiation advantage and promotion strategy based on market research can further improve the sales effect and market competitiveness of Wuchang rice.

4.2. Deep positioning and personalized marketing

Targeting consumers deeply and specifying personalized marketing strategies can effectively increase their willingness to buy. On the one hand, when choosing market positioning and formulating marketing strategies, it is necessary to study and analyze consumers' purchasing behaviors and preferences. Through an in-depth study of consumers' purchasing behavior and decision-making process, we can understand their consumption preferences, purchase motivations, and shopping habits; On the other hand, it is also necessary to consider consumers' concerns about product quality, safety, brand reputation and sustainable development.

4.3. Gradually improve the brand influence

Improving the influence of Wuchang Rice can be started from two aspects: optimizing supply chain management and expanding market coverage. Optimizing the supply chain management mechanism can not only improve production efficiency, reduce waste in the production process, and reduce production costs, but also ensure that products are delivered on time, avoid delays and delivery

problems, meet consumer demand, ensure the on-time delivery of orders, and enhance consumer trust and satisfaction. In addition to the optimization of supply chain management, expanding market coverage is also an important strategy to enhance brand influence. Working closely with channel partners to jointly carry out market expansion activities can expand the sales channels and coverage of products and make products more widely available to potential consumers. By working with channel partners to develop marketing plans, promotional activities, and distribution strategies, you can increase product exposure and awareness, strengthen the impact on the target market, and increase market share and sales.

4.4. Create unique brand characteristics

To further enhance the brand influence and competitiveness of Wuchang rice, it is necessary to create unique brand characteristics. First of all, it is necessary to formulate corresponding brand quality management standards to ensure the consistency and quality stability of Wuchang rice products at various stages. Secondly, it is necessary to provide high-quality after-sales service to meet consumers' needs and expectations and enhance consumers' trust and loyalty to the brand. In addition, implement effective customer relationship management measures, including establishing good interaction and communication with consumers, providing personalized purchasing experience, and customized services to build a solid consumer relationship. Through the comprehensive use of these brand maintenance methods and measures, Wuchang Rice can continue to consolidate the brand image, and enhance brand competitiveness, to achieve greater success in the market.

References

- [1] Yu Guoping, Xu Chunchun, Wu Yawen, etc. *Thoughts on the supply-side structural reform of rice industry in China* [J]. *China Agricultural Resources and Regionalization*, 2020, 41 (03): 53-62.
- [2] Huaxin S, Baiyi L, Chunhui Y, et al. *Fraud vulnerability quantitative assessment of Wuchang rice industrial chain in China based on AHP-EWM and ANN methods* [J]. *Food Research International*, 2020, 140 (prepublish).
- [3] Zeng Weijiong, Xu Licheng. *The 'last mile' of high-end agricultural product prices and the unbalanced development of the industrial chain-an empirical analysis based on the 'Wuchang Rice' in Wuchang City, Heilongjiang Province* [J]. *China Rural Observation*, 2014 (02): 84-91 + 95.
- [4] Achara B, Baichen J, Samuel F K, et al. *Chinese and Thai consumers' willingness to pay for quality rice attributes: a discrete choice experiment method* [J]. *Frontiers in Sustainable Food Systems*, 2023, 7.