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# Agricultural products intelligent marketing technology innovation in big data era

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**Abstract**

Applying big data technology to intelligent marketing of agricultural products is the development trend of agricultural product production and marketing information service, and is an important measure to improve farmers' income and realize targeted poverty alleviation. After analyzing the existing problems of intelligent marketing of agricultural products in the era of big data, this paper constructs the innovation mode of intelligent marketing technology of agricultural products in the era of big data from the collection, storage and analysis technology of big data of intelligent marketing of agricultural products, the construction of the big data center of intelligent marketing of agricultural products and the construction of the public platform of intelligent marketing information service of agricultural products Can be applied in marketing.



*Keywords:* Big data technology; Agricultural products; Intelligent marketing

## 1. Main text

The big data of agricultural products marketing, as the frontier technology of agricultural information, will help boost the precise poverty alleviation proposed by general secretary Xi Jinping. "Internet plus agricultural products marketing" is an important measure to promote the construction of regional characteristic informatization and precise poverty alleviation model. It is a concentrated embodiment of the new generation of information technology to promote the development of rural economy, and is a new technology industry with great potential.In the era of mobile Internet, many characteristic agricultural products with good quality in economically backward areas

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highlight the limitations of their marketing, leading to the current situation that "wine is afraid of deep alley".In this regard, scholars have put forward a lot of suggestions. Li Xiufeng (2014) proposed that the core of big data is prediction[1], Chen Wei et al. (2013) proposed the "agricultural supermarket docking" agricultural production and sales mode[2], and Liu Chunying (2013) believed that the construction of agricultural product production and marketing information service platform could integrate agricultural information resources and promote agricultural product trading[3]. In the future, intelligent marketing of agricultural products based on big data analysis will be the main development trend of agricultural product production and marketing information service. On the one hand, big data analysis from the perspective of supply chain, which regards the production and marketing of agricultural products as a whole industrial chain, will help to monitor and regulate the main body of agricultural production and operation, subdivide the management of agricultural the product market, and realize the docking of small farmers and large market; on the other hand, the application of big data technology in agricultural intelligent marketing can improve the modern production of agricultural products The dynamic response brought by the marketing information service mode to meet the needs of timely adjusting the intelligent marketing strategy of agricultural products in the era of big data is very important for agricultural development. It can effectively improve the sales of characteristic agricultural products in economically backward areas and farmers' income, which is of great significance to improve the economic and social development of rural areas in economically backward areas [4].

## 2. Existing problems of intelligent marketing of agricultural products

At present, the development level of big data technology in the intelligent marketing of agricultural products in China is not high, especially in the application and promotion of various regions is very uneven. In the face of the turbulent big data era, the problems existing in the intelligent marketing field of characteristic agricultural products in economically backward areas are more and more prominent. First of all, the existing marketing information of agricultural products can not be effectively integrated. A large number of data carried by agricultural product sales information are developing towards the trend of decentralization, diversification and complexity, thus increasing the difficulty of agricultural product marketing information management analysis[5]. With the advantages of big data technology, from the perspective of supply chain, the production and marketing of agricultural products are analyzed as an industrial chain, which is expected to solve this problem technically. Secondly, the existing response mechanism of agricultural product marketing information service is not perfect. For example, in terms of the fluctuation of agricultural product prices and supply-demand relations, there are always market emergencies such as "garlic you are cruel", "beans are playing", "ginger is your army" ,"pigs are rising". The main reason is that a lot of agricultural products marketing in economically backward areas are registered enterprises and individual online stores on taobao.com, Jingdong and other platforms, or micro stores registered on WeChat and other platforms. Without scale, it is difficult to form brand effect; the connection between producers and merchants is not smooth, so it is difficult to form linkage effect; the degree of deep processing of products is low, so it is difficult to form scale economy effect, and real-time with the help of big data technology,The updated data can monitor the whole process of production and marketing of agricultural products, and provide technical support in monitoring and early warning analysis of intelligent marketing of agricultural products.

## 3. Innovation of big data technology in intelligent marketing of agricultural products

As an important part of the new generation of information technology, big data technology can effectively solve the bottleneck problems in the collection, storage, analysis and processing of massive data in the past. The intelligent marketing mode of agricultural products based on big data is mainly through the application of big data technology and artificial intelligence methods to connect customer data with product demand and social benefits, realize upgrading of the marketing mode, establish intelligent of the service mode, realize real-time linkage between small farmers and agricultural market participants, and maximize economic benefits [6].

The innovation of big data technology in the intelligent marketing of agricultural products is carried out according to the idea of "theory technology application", as shown in Figure 1.

In the aspect of theoretical research, aiming at the problems existing in the intelligent marketing of agricultural products, this paper analyzes the theory and practical application of big data technology in the field of intelligent

marketing of agricultural products, and clarifies the main business processes of intelligent marketing of agricultural products;

In terms of technology research, the paper analyzes and designs big data technology solutions for agricultural products intelligent marketing on the whole, and deeply studies the key technologies in big data collection, storage, analysis and processing;

In the aspect of platform construction and practical application, build agricultural products intelligent marketing big data center, and on this basis, build agricultural products intelligent marketing information public service platform.

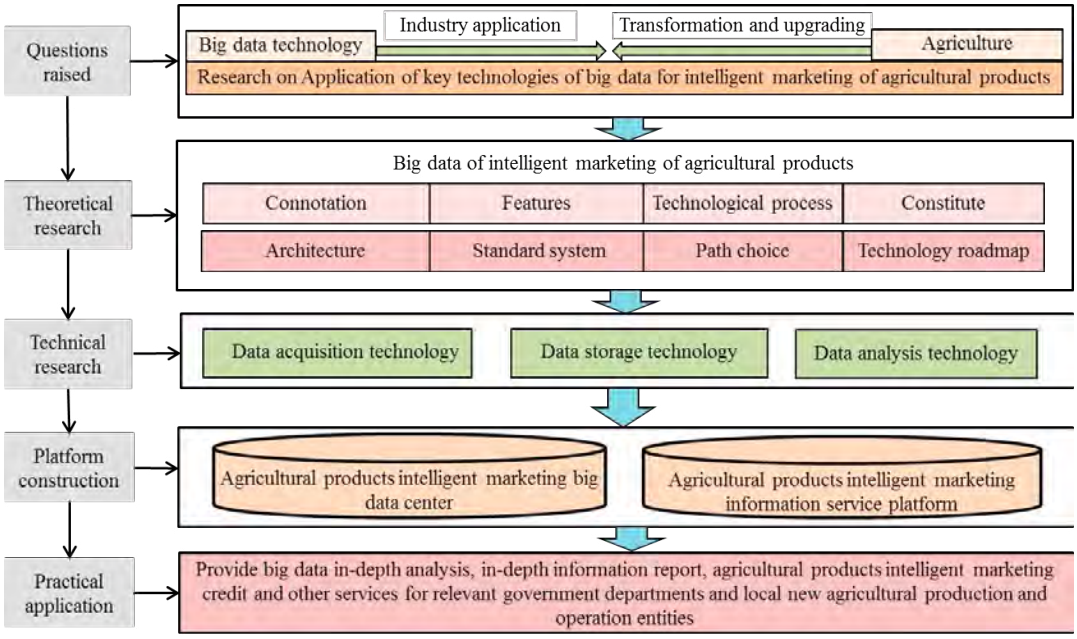


Fig. 1. Innovation ideas of agricultural products intelligent marketing technology

### *3.1. Big data acquisition technology of agricultural products intelligent marketing*

In view of the main regional characteristics of agricultural products,the construction of regional agricultural products intelligent marketing big data center, provide localized and accurate data sources for agricultural products intelligent marketing. In order to realize the intelligent marketing of agricultural products, it is necessary to collect various forms of data, such as images, videos, audio, text and so on. This requires the development of a unified network data acquisition platform, for professional cooperatives, family farms, agricultural enterprises and other new agricultural production and operation entities,as well as all kinds of agricultural management institutions and departments, to achieve the automatic acquisition and update of agricultural products data.

### *3.2. Big data storage technology for intelligent marketing of agricultural products*

The construction of agricultural products intelligent marketing big data center based on public cloud needs to establish low-cost big data storage, efficient data retrieval system, data noise, data redundancy and other issues will inevitably increase the data storage cost, and high-efficiency and low-cost data storage technology is particularly important[7]. This paper studies the data management system with row storage, column storage and row column hybrid data storage structure as the main technologies, and establishes a non relational database system supported by NoSQL. The intelligent marketing of agricultural products involves massive and multimodal data characteristics, It includes image, video, text and other forms of data, which are often associated with multimedia and multimodal data

in specific scenes.How to carry out cross media semantic analysis, find out the relationship of multimedia multimodal data, and carry out multimodal data fusion, and provide flexible and efficient data retrieval function.

### *3.3. Big data analysis technology for intelligent marketing of agricultural products*

The huge amount of agricultural products intelligent marketing data brings opportunities for intelligent marketing, but also brings many challenges to data analysis, mainly including: super large scale samples and ultra-high dimensional characteristics; lack of data and noise, low reliability of data; generally with complex internal structure, its complexity is growing. By focusing on the exploration and utilization of data inherent characteristics and specific application background, it is necessary to put forward targeted agricultural product intelligent marketing big data analysis model, and then design efficient optimization algorithm to effectively process large-scale data, so as to serve massive agricultural intelligent marketing data mining, accurate user portrait, personalized search and recommendation, etc.

### *3.4. Construction of the big data center for intelligent marketing of agricultural products*

The construction idea of agricultural products intelligent marketing big data center is shown in Figure 2.

First of all, according to the data acquisition requirements of agricultural products intelligent marketing, a unified data acquisition platform for agricultural products intelligent marketing is developed, which provides a unified data acquisition interface for the image, text, video, audio and other formats of data.

Secondly, according to the characteristics of intelligent marketing data of agricultural products, such as more noise, the complex format and diversity of sources, the processing and optimization technology of intelligent marketing data of agricultural products is studied. After that, the knowledge map of agricultural products is constructed by using the processed data.

Then, we store the processed data and knowledge map into the distributed database. And to achieve agricultural products related query, retrieval, management and other services.

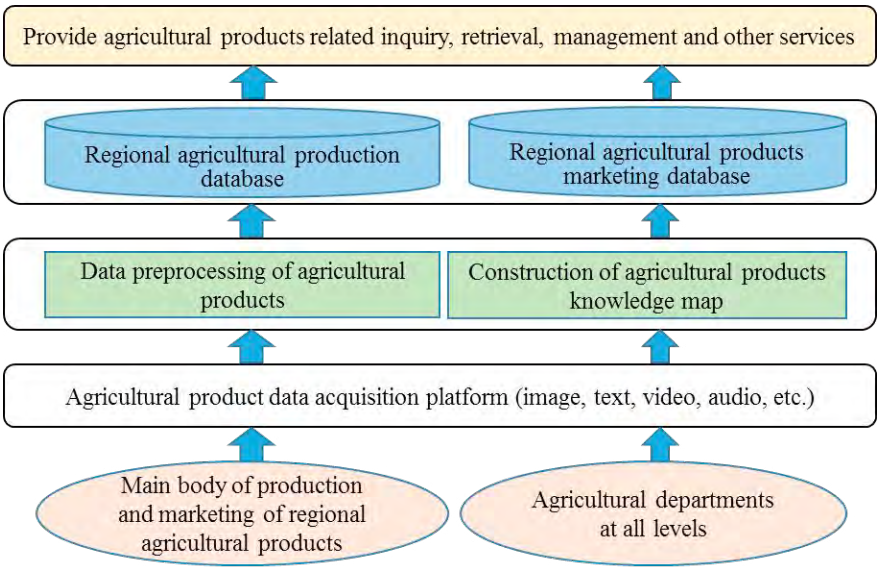


Fig. 2. Construction idea of agricultural products intelligent marketing big data center

### *3.5. Construction of agricultural products a intelligent marketing information public service platform*

In view of the three main information service modes of agricultural product production and marketing, which are mainly cooperative the led, leading enterprise led and platform the led, this paper compares and analyzes the development trend and evolution trend of different types of information service modes from multiple perspectives, and constructs regional agricultural intelligent marketing information public service platform based on big data technology, as shown in Figure 3 It is shown that. The platform mainly provides big data analysis, in-depth information report, intelligent marketing and precise management services for local new agricultural production and marketing entities; regularly publishes market information of major agricultural products in the region, key industry observation, latest industry market situation and in-depth analysis report. At the same time, with the help of agricultural products intelligent marketing big data center, the platform can realize the comprehensive control of regional agricultural product circulation, agricultural product price, agricultural product market, agricultural product quality and safety data, realize the sudden, dynamic and real-time requirements of agricultural product intelligent marketing, and help solve the problems of small farmers and large market docking, agricultural product production and market demand mismatch In the past, the information platform only provided basic information content to provide comprehensive application services of big data.

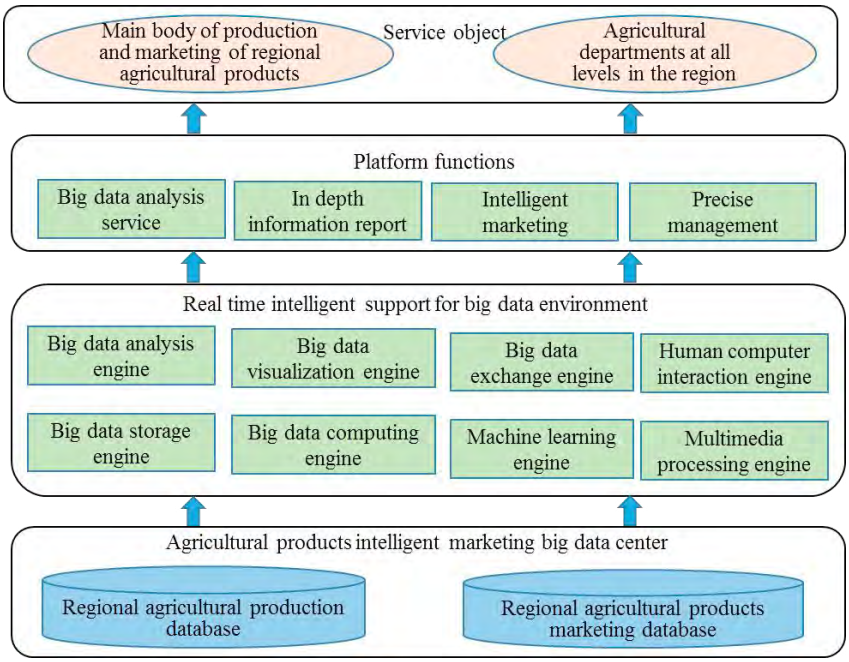


Fig. 3. Construction of public service platform for intelligent marketing information of agricultural products

## 4. Application of three big data technologies in agricultural products intelligent marketing

The purpose of applying big data technology to the intelligent marketing of agricultural products is to effectively improve the income of farmers, to achieve "targeted poverty alleviation" in economically backward areas, and to improve the status quo of regional characteristic agricultural products "the fragrance of wine is also afraid of deep alley". However, the production, circulation and consumption of agricultural products are limited by natural conditions, social economy, international political environment and other factors To predict. Therefore, the intelligent marketing of agricultural products must be based on the real-time collection of big data of agricultural products and the fine analysis of big data of agricultural products, so as to ensure that the analysis results can make accurate predictions that adapt to the market mechanism and customer needs, support the production and marketing

process to produce a linkage effect, effectively respond to emergencies, and realize the real-time docking of small farmers and large markets Taking Yunfu City as an example, the application of big data technology in intelligent marketing of agricultural products is shown in the following four aspects:

### *4.1. Market segmentation by big data technology*

Market segmentation is a process of distinguishing consumer groups with different demand preferences based on some characteristics of consumer demand. According to different standards, the overall market of agricultural products in Yunfu City is divided into several sub markets, which is conducive to formulate more accurate marketing plans for different target markets, to put limited human and material resources into the target market, to adjust the production plan of agricultural products in Yunfu City, to explore new markets, to seize the best time point of sales, and to improve the economic benefits of agricultural products. According to different standards, through big data analysis, it can be further subdivided into the married and unmarried consumer market, the high-income consumer market and the low-income consumer market, processed agricultural product and the unprocessed agricultural product market, the male consumer and female consumer market, online consumer and offline consumer market.

### *4.2. Select the target market with big data technology*

The target market mainly refers to dividing the consumer collection according to the categories of characteristic agricultural products in Yunfu City, and dividing the marketing activities into several sub markets. The results of big data analysis show that the high-quality and healthy animal husbandry products in Xinxing County and Rice based agricultural products in Luoding City are mainly married, low-income, unprocessed agricultural products, women and offline consumer markets; Yunan County's choice of high-quality fruit is mainly the married and high-income consumer market, the processed agricultural products are mainly online female consumers, while the agricultural products before processing are mainly offline consumers; Medicinal materials in southern China is mainly married, high-income, processed agricultural products, and male market, while its occupation is mainly composed of medical company staff and self-employed.

### *4.3. Positioning the market with big data technology*

Market positioning is mainly aimed at the target market of characteristic agricultural products in Yunfu City. Consumers attach importance to the characteristics, attributes and core interests of the corresponding products. Through the positioning methods of marital status, class positioning, gender positioning, occupation positioning, consumption channel positioning, etc. the unique image of Yunfu agricultural products is created and competitive advantages are formed in the target market. Therefore, Yunfu City can make use of pollution-free water resources, soil resources and sunlight temperature, and has the inherent conditions to produce high-quality agricultural products. According to the analysis of big data, the selected target market can further refine the positioning of agricultural products the market in Yunfu City. For example, Yunan County high-quality fruit and Luoding organic rice are positioned in pollution-free, green, organic, medium and high-end target markets; high-quality and healthy animal husbandry products in Xinxing County are in the married, low-income, unprocessed agricultural products and women's target markets; Nanyao is positioned in the middle-aged, Middle and high income male target market.

### *4.4. Using big data technology to implement intelligent marketing*

Through the analysis of consumer behavior of agricultural products, the consumer behavior of Cloud City is analyzed. Based on the massive consumer behavior data, this paper analyzes the consumer behavior of different consumers, summarizes the general rules of the target sub market consumer groups, establishes the sub market sales forecast model, implements the sub market refined and intelligent management, and achieves the goal of accurate portrait of consumers in the target sub market, risk management of emergencies, intelligent marketing and service

To further enhance the real-time docking ability of small farmers and large markets, enhance the risk prevention ability of small farmers, and effectively improve the economic income of the majority of farmers in Yunfu City.

## 5. Conclusion

With the rapid development of the new generation of information technology represented by big data technology, intelligent marketing of agricultural products based on big data technology will be the development trend of agricultural product production and marketing information service. In view of the existing problems of intelligent marketing of agricultural products in the era of big data, this paper puts forward the innovation mode of intelligent marketing technology of agricultural products from five aspects: the collection, storage and analysis technology of agricultural products intelligent marketing big data center and the construction of public platform of agricultural products intelligent marketing information service, which is directly applied to Yunfu City where the author is located To achieve real-time linkage between small farmers and agricultural market participants, increase farmers' income, and achieve certain results. However, with the continuous development and progress of the new generation of information technology and mobile Internet era, in the future, further research can be carried out in the field of intelligent marketing of agricultural products.

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