

Research on Digital Intelligent Farming PlatformBased on Big Data Information Analysis Technology

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Abstract. Big data information technology has gradually penetrated into every aspect of people's lives and become one of the important factors to be considered for the development of the world economy and the development of various enterprises. As China is a large agricultural country, it is of great practical significance to help farmers get rid of poverty and become rich through Internet information technology. However, most of the existing agricultural software in China have a wide variety of software, single function, complex operation and other general problems, no software or website can really achieve planting guidance, agricultural business docking, sales security and information management as one based on big data information analysis technology. This paper firstly introduces the research significance of the digital intelligent farming help platform with the current social situation in China, focuses on the specific construction of the intelligent farming help platform based on big data, and analyzes the platform innovation points, and finally puts forward objective evaluation and outlook for the platform.

Keywords: Big data information analysis technology; Digitalization; Farming assistance platform.

1. Introduction

"The paper focuses on individual farmers who grow food in China and towns that grow crops for the direction of poverty alleviation. On the basis of ensuring that online sales safety issues benefit consumers and agricultural producers, the paper relies on big data information analysis technology^[1] to optimize the allocation of resources to the agricultural sales platform and the reasonable allocation of resources to deal with emergencies such as the new crown virus^[2], to build a highly practical and real-time digital intelligent farming platform with "information reciprocity," "sales safety^[3]," and "mutual benefit for farmers and businesses," and to give farmers scientific guidance on production and sales using the "Internet + agriculture" development model.

2. Research Status

The development of agricultural platform has broad prospects: 2022 to date China's rural digital economy development has entered a deepening stage, the construction of intelligent agriculture from point to point gradually unfolded, such as big data and cloud computing and other cutting-edge information technology will be deeply integrated with all aspects of the agricultural industry chain.

Mobile digital network has greatly promoted the sales of agricultural products, but the access to information based on big data analysis still needs to be strengthened: Internet technology has an important role in the development of agricultural economy, which can improve the efficiency of agricultural production and increase farmers' economic returns. The Internet is open, shared and public. By combining Internet technology with agricultural production, farmers can learn valuable agricultural information, develop effective strategies for agricultural activities and enhance farmers' profitability.

Smart logistics in the network sales security still needs to be studied: With the continuous development of smart logistics technology^[4], integrated sharing of logistics information resources in a large system, to "cloud" to provide all kinds of users with all kinds of on-demand logistics services, has become the consensus of the industry, but how to protect the interests of both sides of the sale of security still needs to be strengthened. In particular, the practice of dealing with emergencies that threaten public safety still needs to be studied.

3. Research significance of digital intelligent farming help platform

Digital information in the age of intelligence has brought convenience to the sales of agricultural products, and the sales of agricultural products combined with the e-commerce platform has promoted the change of the structure of agricultural cultivation mode. On the basis of solving the outstanding problems of agricultural products, "Yunshang Help Agriculture" builds a highly practical digital intelligent farming platform^[5] with "information reciprocity", "sales safety" and "mutual benefit for farmers and businessmen". "It uses the "Internet + agriculture" development model to give farmers scientific industrial planning. The platform uses big data analysis and data model to give farmers real-time market analysis data, promote the informationization of supply and demand market of agricultural products, let farmers understand the agricultural information of different regions, realize resource integration^[6] and make reasonable planting plan. It also unifies the dispatching of agricultural products, stationing them in purchasing superstores and enterprises, helping farmers to find demand partners and establishing agricultural business cooperation, thus improving the operational efficiency of farmers. The project deeply considers the education level and needs of farmers, and develops an easy-to-use and practical digital platform with a large number of farmers as the main target, which has a replicable value in the era of digital economy.

With the rapid development of e-commerce platforms in recent years, the boom of helping farmers continues, and many people pay for helping farmers with love. However, due to the poor supervision of individual agricultural products and the lack of a perfect fresh produce logistics and distribution system, the fresh produce received often collides and rots, and many merchants sell poor quality goods under the banner of helping farmers, which consumes the public's enthusiasm for helping farmers and prevents farmers who really need help from enjoying the benefits brought by "helping farmers". The platform increases the supervision of "before + after sale", focuses on solving the problem of the safety of helping agricultural products sold on the Internet, so that farmers can enjoy the benefits of "helping farmers" while protecting the rights and interests of buyers. We will improve the screening and supervision mechanism for cooperative farmers, conduct regular quality spot checks to ensure the quality of the supply, and integrate information and coordinate products for the goods to be listed on the platform, so that buyers can understand the source information and select cooperative farmers. In terms of "after-sales", the platform will improve the construction of after-sales system, and the platform will guide farmers on the correct way to preserve freshness and packaging for different agricultural products to reduce pollution and damage in the distribution process. The platform will also select trusted logistics parties to reach cooperation, using big data algorithms and information analysis technology to ensure that the products are transported through the cold chain^[7] within a range sufficient to guarantee quality, reduce pollution and damage during the delivery process, and try to achieve "zero damage" to the products.

In case of unexpected situations, the "Yunshang Help Agriculture" platform has a series of emergency response mechanisms^[8]. Take the new crown epidemic as an example, under the background of the epidemic, a large number of agricultural products could not be transported and delivered due to the problem of blocked traffic in the city^[9]. Through cloud computing analysis technology, the platform divides the areas affected by the epidemic into two types of distribution areas, establishes links between farmers and vegetable buying communities or supermarkets in the region with the city as the boundary, makes unified allocation of agricultural products in the area where the epidemic is located, fully ensures the packaging and disinfection of goods during the special period, carries out point-to-point distribution of agricultural products within the closed city, broadens the channels for residents to buy vegetables and farmers' sales during the epidemic, and solves the problem of the epidemic. We can solve the problem of stagnant sales of farmers caused by the epidemic.

In the age of intelligence, most farmers still rely on the experience handed down from the old generation to farm, but with the progress of the times, the purely empirical way of farming is lacking for farmers. The platform has also established a community section to help farmers solve planting problems in a targeted manner through cooperation with experts, to guide farmers in scientific

planting and popularize professional agricultural knowledge. It also provides a platform for farmers to communicate with each other, realize mutual help, strengthen the connection between farmers in different regions, and help each other answer questions and share farming experience based on their experience. The board updates national agricultural policies in real time to help farmers understand agricultural information.

4. Analysis of the construction and innovation of intelligent farming platform based on big data

4.1 Basic conditions for project research and implementation

The "Yunshang Farming Support" is a digital wisdom farming platform^[10] with "practicality" and "efficiency", on the one hand, the platform helps farmers by stationing cooperative enterprises and helping them to find partners and provide cooperation and supervision mechanisms for the products grown by farmers. On the one hand, the platform is a platform to find partners and provide cooperation and supervision mechanism for the benefit of both parties, to distinguish between cold chain transportation and traditional transportation according to the demand of products, and to guarantee the quality of agricultural products. The main mode of operation of our project is online, and the initial promotion phase is a combination of online and offline publicity, in order to expand the visibility of the platform and attract more farmers and merchants to join. The core points of our project are "information technology", "safe sales", "mutual benefit of farmers and merchants" and "real-time help".

The project responds to the national policy to create a digital intelligent farming platform, providing the latest agricultural information and market information for farmers using the platform, and through the help of the platform to improve production and sales benefits. "The platform is based on the integration and analysis of information by the well-developed big data and cloud computing technology, which covers information on agricultural production, growth of agricultural crops and related factors affecting agricultural production. The information collected is timely and accurate, helping farmers to understand the market and make relevant measures to improve crops or increase or decrease planting.

Nowadays, online purchase has replaced the traditional offline purchase method, and "poverty alleviation" and "helping agriculture" are also hot topics in the country, and the selling point of "helping agriculture" can attract many consumers for supermarkets and expand the reputation of cooperative enterprises. This is undoubtedly a mutually beneficial and win-win model for farmers and merchants. This is undoubtedly a mutually beneficial model for farmers and merchants. The number of third-party logistics companies in China's cold chain logistics is large, and the cold chain logistics network is developing and maturing. It is feasible to select cold chain logistics and traditional logistics according to the freshness characteristics of agricultural products, and cooperate with third-party companies for distribution.

4.2 Implementation Program

"Our platform is mainly in the mobile terminal, providing farmers with analysis and forecast of the market, broadening the channels of selling vegetables, solving planting problems and learning exchanges. All the data and applications are maintained uniformly on the server side, and the user side can perform all the operations by logging into the website. Following the principle of simplicity and practicality, the functions are simple and easy to understand the name, and the operation is what you see is what you get, providing convenient background services website management. The platform adopts a modular and structured design, so that the platform can be extended and improved with the personal planting needs of the function, easy to upgrade and improve the platform subsequently.

The platform is dedicated to solving the problems of online sales security, inequality of information of buyers and reliance on personal experience in the planting process to the maximum extent possible, and to help farmers dock to contact e-commerce companies and large suppliers to establish long-term cooperation and help solve the problem of stagnant sales under the condition of protecting farmers' interests.

The platform is developed on Windows or Linux operating system platform, Android 5.0 and above in the development environment using IOS8.0 or higher, configured with certain hardware, to develop a digital farming platform with development architecture, easy to expand, easy to maintain, with good human-computer interaction interface, to achieve user registration and login, user basic information. Its functions include questions and answers from experts, market information, learning and exchange and user transaction modules to realize modern agricultural farming for farmers under big data and maximize their benefits.

The database module of the website is supervised and managed by the administrator of each module. The website will be continuously improved by adopting the steps of user trial and feedback before performance optimization, providing a forum platform at the later stage, accepting user feedback and adopting good suggestions from users.

4.3 Innovation points and features

"Yunshang helps farmers" provides two aspects of supervision: "pre-sales + post-sales". The platform focuses on solving the safety problem of helping agricultural products sold on the Internet, creating a platform for selling agricultural products, conducting regular quality sampling, providing information on production sources, and greatly protecting the rights and interests of farmers and buyers. In the aspect of "after-sale", the platform improves the construction of after-sale system, reduces the loss rate of agricultural products in circulation, supports the origin of agricultural products, accelerates the standardization of quality, uses big data algorithm and information analysis technology, promotes the digital upgrade of the integrated chain of production, supply and marketing, and achieves "zero damage" of products.

"Yunshang helps farmers" has a series of complete emergency response mechanisms for unexpected situations. Take the epidemic as an example, the platform builds a special situation trading section, establishes a link between farmers in the epidemic area and communities or supermarkets, broadens the sales and purchase channels of agricultural products, and carries out the unification and dispatch of resources in the city through cloud computing analysis technology and logistics cloud mode to solve the problem of urban agricultural products.

Through cloud computing analysis technology and logistics cloud model, we can coordinate and dispatch resources in the city to solve the problem of scarcity of urban agricultural products. Following the principle of "people are the most active factor in productivity", the company realizes data to help farmers, takes the market as the guide, participates in agricultural poverty alleviation and development through big data, and reduces the rate of stagnant agricultural products.

"Yunshang helps farmers" uses "online + offline" data information and technology to help farmers. The platform builds a community section, uses big data technology, collects and updates market data in real time, breaks the information barrier, changes from people looking for information to information looking for people, and improves the agricultural science and technology information service system. Multiple communication channels are established to realize experience sharing among farmers, real-time communication between farmers and buyers, after-sales question and answer for buyers, and strengthen the connection between individuals from different regions. Through cooperation with experts, we popularize professional agricultural knowledge, guide farmers in scientific planting and help them solve planting problems in a targeted manner.

5. Conclusion

This paper analyzes the advantages and shortcomings of similar products such as farming software or platforms already available in the market, and further studies the new mode of "Internet+agriculture" development by combining the current situation of farmers and agriculture in China, and develops an easy-to-use and practical digital intelligent farming platform with a large number of farmers as the main target. The aim is to use big data analysis technology to help scientifically guide farmers in planting and promote safe sales of agricultural products, which is valuable in the era of digital economy. In addition, because of the many factors to be considered and practical problems to be solved, the platform needs to be evaluated and researched in practice on the basis of mature technology, so as to continuously improve the platform mechanism.

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