Research on Agricultural Products e-Commerce Platform and Information Network Construction Based on Collaborative Distribution

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Abstract: E-commerce of agricultural products is a new type of agricultural products sales mode with the help of network platform. The development of e-commerce of agricultural products and the construction of e-commerce platform and information network of agricultural products are of great significance to the improvement of agricultural products circulation system and the promotion of safe, stable, efficient and modern development of agriculture. Based on the theme of collaborative distribution around the rapid construction of agricultural products e-commerce website platform, according to the guidance of website production theory, this paper uses CMS system, IIS information server, SQL Server2008 database, Dream weaver and other software, as well as basic programming language knowledge, taking Site Server CMS system as an example, to create an e-commerce platform that can realize agricultural products sales. Through e-commerce platform, data can be connected with the information systems of both supply and demand sides to realize information sharing.

1. Introduction

As a strategic industry for economic development in the new century, electronic commerce has brought unprecedented changes to the development of human economy and society. Although Chinese agricultural informatization is still at the initial stage of development at this stage, the traditional agriculture-related enterprises continue to accelerate the extension expansion in the field of informatization. Relying on rural e-commerce to open up the agricultural information market will make the entire agricultural industry market more diversified and diversified [1]. The balance between supply and demand of agricultural products means that their agricultural products have markets and can be effectively sold. So how to mobilize the enthusiasm of farmers and increase their income? The mobilization of farmers' enthusiasm mainly lies in the increase of income, and the main source of farmers' income is the sale of agricultural products. Therefore, it is wise to use agricultural e-commerce to promote the sale of agricultural products [2]. The production scale of small farmers' agricultural products is limited, the geographical location is relatively large, and the market is relatively remote. In addition, the transportation mode of agricultural products is single. The agricultural products they can supply show the characteristics of low total quantity, uneven quality standards and high transportation cost, which cannot meet the demand of large urban markets for agricultural products.

Collaborative distribution is also called joint collaborative distribution, that is, breaking the limitation of a company's logistics rationalization, several collaborative distribution centers are combined to form a collaborative distribution alliance, sharing resources and working together [3]. The increase in the total revenue of the cooperative alliance caused by cooperative distribution is the result of the combined effect of revenue and cost. The synergistic effect increases the total revenue of the cooperative alliance or reduces the total cost or both. Actively exploring the development of e-commerce for agricultural products and building an e-commerce platform for agricultural products based on collaborative distribution are of great strategic significance to the improvement of agricultural products circulation information network and agricultural products circulation system and the promotion of safe, stable, efficient and modern development of agriculture.

2. Analysis on the Operation Problems of e-Commerce Platform for Agricultural Products in China

2.1 In Understanding, Government Departments Cannot Meet the Development Requirements of e-Commerce for Agricultural Products

As a new business model, e-commerce is linked with many other disciplines and technologies such as information technology, management, law, etc. Due to the imbalance of economic development, the geographical distribution of agricultural websites is unbalanced [4]. The development of e-commerce websites in rural areas presents a state of developed southeast coastal areas and slow development in central, western and northern areas. At the same time, the proportion of websites with agricultural information as the main content in the country is relatively low, and the degree of utilization is also low. Although the use of online shopping among rural netizens is less than that of urban netizens, it can be seen that online shopping is increasing its penetration into rural areas, which also shows that rural netizens have basically accepted the consumption habit of online shopping. Chinese grassroots cadres, due to lack of relevant computer knowledge, cannot understand e-commerce, resulting in a lack of confidence in its development, thus delaying the development process of e-commerce for agricultural products.

2.2 In Terms of Knowledge, Farmers Are Not Easy to Master Relevant Knowledge

At present, the proportion of netizens engaged in agriculture-related occupations in our country only accounts for 0.4% of the total number of netizens [5]. At the same time, these netizens are concentrated in first-tier cities and coastal cities and are engaged in agricultural management, while there are no similar agricultural experts in the rural areas with a weak foundation. Lack of sufficient confidence in e-commerce and unclear understanding of the role of network economy are important reasons for the slow development of e-commerce in rural areas. However, in the information economy era, whoever has mastered the information will be in a favorable position for competition and those who know the backward will be mercilessly eliminated by the market. In particular, farmers' professional cooperatives, leading agricultural enterprises and other agricultural production and operation entities must obtain market conditions in a timely manner through e-commerce means, reduce marketing costs and improve production and operation benefits.

2.3 In Terms of Infrastructure, the Construction of e-Commerce Platform is Still Very Weak

There is no doubt that the network construction in rural areas of our country is lagging behind, resulting in the construction of the relevant e-commerce platform is also lagging behind, and the existing network cannot meet the requirements of information technology. At the same time, the existing e-commerce websites lack relevant agricultural information resources, and are of poor practicability, repetitive construction, low sharing and utilization. With the popularization rate of the Internet increasing year by year, online information resources services are continuously increasing and improving, and agricultural practitioners can obtain all kinds of information through agricultural e-commerce websites. With the increasing coverage of e-commerce websites for agricultural products, the number of diversified target audiences is also on the rise. Therefore, the construction of e-commerce platform for agricultural products.

3. Demand Analysis and Overall Design of Agricultural Products e-Commerce Website Construction Based on Collaborative Distribution

3.1 Principles for the Construction of e-Commerce Websites for Agricultural Products

3.1.1 Authority and Advancement

This system is mainly applied to agricultural products sales e-commerce platform, has certain pertinence, and should be different from other commercial and professional e-commerce systems. The advanced CMS system adopted has technology as a guarantee. In order to meet the requirements of system function and performance, its strict review procedure can conduct detailed

review of all released information to ensure the safety, reliability and accuracy of information [6]. E-commerce platform is a virtual network space for business activities on the Internet and a management environment to ensure the smooth operation of business. It is an important place to coordinate information flow, material flow and capital flow to make them flow orderly and efficiently. Our website is aimed at the sale of agricultural products, so the decoration of the website should start from the aspects of beauty, simplicity and so on, so as to show the integrity of the website and the simplicity and innocence of farmers. Remember not to decorate the webpage too luxuriously, giving people a kind of gaudy feeling, which reduces the credibility of the website. At the same time, it is combined with advanced security software to prevent hackers from attacking databases and tampering with page information to ensure the strong vitality of the system and to reflect the seriousness and authority of agricultural information.

3.1.2 Timeliness and Manageability

The information in the system needs to be updated in time, and the system is required to have strong manageability, which can ensure the most accurate transaction and supply and demand information to both buyers and sellers in the first place, so that users can correct their own market strategies in time and protect the rights and interests of users of both sides. E-commerce websites are mainly aimed at the sale of agricultural products. Specifically, the village's sweet potatoes and other agricultural products are sold on the Internet. In terms of commodity classification, they can be divided into ordinary and characteristic categories for sale. In the field of agricultural product market circulation, information networks can be used to provide agricultural product information, a collaborative trading platform for implementing agricultural product network transactions, or an online virtual market. It can provide online agricultural product information services and online purchases to form an electronic agricultural product information network [7]. When the system receives a large amount of information in a short period of time, the system must be easy to manage in order to provide separate services and ensure normal functions, so as to reduce operating costs.

3.1.3 Reliability and Safety

The software and hardware used in the operation of the website platform should be safe and reliable. The system has stronger ability to protect data information, and will not cause data information loss and damage when accidental accidents or operational errors occur during system operation. Some websites have real-time dialog boxes for online communication. Users log in through authentication to obtain cloud computing services. The software-as-a-service layer can be built according to the structure of the e-commerce supply chain for agricultural products, from farmers to cooperatives, agro-processing enterprises, e-commerce platform enterprises, customers, as well as logistics systems and payment platforms. Large-scale agricultural production, mainly through the transfer of land, land contiguous form a certain scale, through specialized production, reduce the production cost of agricultural products, improve the scale of agricultural production benefits [8]. CMS system requires very high security when managing website resources. In order to ensure 7x24 uninterrupted service of the system, on the one hand, it must ensure the consistency of data information before and after, on the other hand, it must also ensure that the damage loss of data information is minimized under abnormal conditions.

3.2 Basic Methods for Building e-Commerce Websites for Agricultural Products

3.2.1 Website Planning

E-commerce websites for agricultural products have a variety of business modes, which require enterprises to analyze and locate according to comprehensive information such as technical ability, market environment and types of resources they have mastered. Business development is related to the future core competitiveness of enterprises and is the focus of the construction of e-commerce websites for agricultural products. User requirements are analyzed and normalized and sent to the node platform. Node platform uses information acquisition and integration to provide users with information to meet their needs. Therefore, the commodity information, vehicle and driver

information, warehouse and storage information, equipment information, customer information and cooperative distribution route information required by each subsystem must be initialized and defined. According to the template maker provided by CMS system and its special STL template language, visual editing of website pages can be realized. Flexible customized columns can be placed at any position, column information can be scrolled, and date can be published. The remote access interface RMI provided by Java interacts with the Web application server. For example, the user message consultation system and online payment function in the electronic agricultural products sales website are typical third-party applications. The system should also have the function of providing help support and forum center. Users can discuss and understand the required information in the forum and provide help support to those in need.

3.2.2 Website Page Design

The website page as a whole should be concise and generous, which can clearly show the classification of agricultural products and related agricultural related industry information. It will not repeatedly link to the same page and functions that have no actual use value. Combined with the characteristics of cloud computing and agricultural products trading, the basic functional modules of the platform should include: user authentication, online shops, information publishing, transaction management, credit evaluation, and online payment. The single processing center generates the receipt notice (equivalent to the delivery application form of the supplier), the collaborative distribution notice (equivalent to the collaborative distribution application form of the supplier), the warehouse allocation notice and the collaborative distribution completion notice (equivalent to the receipt confirmation of the customer). External applications in electronic agricultural products sales websites mainly refer to some information processing that takes up resources and runs on servers or hosts other than application servers, so as not to affect the performance of website business systems. One of the most important is a part of batch processing program. The layout of pages and frames should be reasonable, and the colors of background, pictures, fonts and other contents should be reasonably matched and attractive. Leave a good browsing experience for users. The final display page can well guide users to use the website and clearly display the main functions of the system.

3.2.3 Function Development and Testing

Finally, build the website platform and develop each functional area. The platform uses this module to manage, authenticate identity and authority of system users (including consumers, farmers, cooperatives, agriculture-related enterprises, logistics enterprises, etc.). After adding users from different departments and corresponding permissions, the operation permissions of different users are allocated. Users can also modify their passwords after logging in. For the safety of system data, the system should also provide data backup and recovery functions. The internal test of the overall function after all is completed, and the corresponding modification shall be made according to the feedback result after the test to reach the online standard of the website.

3.3 Platform Function Target

3.3.1 Page and Column Maintenance Module

The homepage is the carrier to release advertisements and information. The homepage of an enterprise represents the image of the enterprise. Its design is very important to the whole website. The platform system should be able to adjust the width and height ratio of the homepage and subordinate pages, and group the contents of the homepage. The width of each group should be specified. Each transaction record is processed and retained, information is sent to the server, and the information is analyzed and summarized, so as to analyze the purchase behavior and purchase habits of consumers and serve the network marketing. Third party logistics enterprises mainly use their own equipment resources and information resources to provide storage and transportation services for customers of both supply and demand. Therefore, in the third party logistics management information system, the storage management subsystem is a very important system

module. When we need to set the attribute of information column, we can choose how to display the column title, how high and width the column is set, or the ratio between the two, the position of the column in the parent column and the child column, and whether to display the date of information release. The main functions of the development package of the electronic agricultural products sales website are roughly analyzed, so that everyone can have a perceptual understanding of the functional structure of the electronic commerce website.

3.3.2 Maintenance Personnel Authority Management Module

A role can generally be understood as an administrator with certain matching permissions. A role is a collection of custom permissions. We can assign multiple different permissions to each role or create multiple roles. Carry out a comprehensive online credit evaluation on platform members (farmers, online shops, cooperatives, logistics enterprises, etc.) to provide reference basis for consumers to purchase. The background management part mainly aims at various functions provided by the administrator to help the administrator to carry out various maintenance and management work of the website. According to different permission levels, the system divides all administrators into the following three levels: administrator, site chief administrator and super administrator. Let the supply and demand sides trade directly to the greatest extent possible and reduce transaction costs, so as to realize the digital informatization of the main links of agricultural products circulation.

3.3.3 Website Statistics Module

According to the above requirements, CMS, a content management system with perfect process and rich functions, which can effectively solve common problems in website management, came into being. CMS has a strong advantage in website content management. It only needs to master a simple programming language to manage websites. The characteristics of CMS content management system are shown in Figure 1 below.
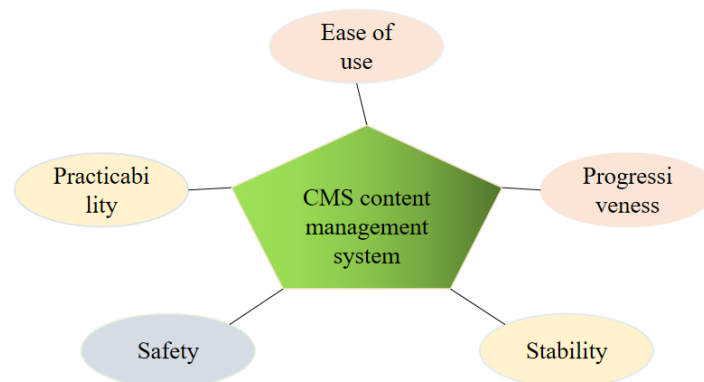

Fig.1 Features of Cms Content Management System

CMS system provides a statistical function module that can intuitively show the activity level of administrators at all levels. It can perform statistical analysis and management on the information in the station, and can also count the specific operation information of each administrator on the system. The system should integrate and publish the information of relevant logistics enterprises, so that users can track the purchased logistics information in real time. At the same time, the platform can automatically track and remind the returned logistics information. Vehicle tracking record information, including document information, time, direction, status, location, logistics center, location, failure, failure level, failure start time, failure removal time, etc. The traffic statistics of all web pages in the column together are the total traffic of the column. The module can respectively count the annual, monthly and daily traffic of the column, and list the column names according to the traffic size, which is convenient for system testing and statistics. Batch processing programs are generally independent of application servers and run on external hosts to reduce the performance impact on other business processes of electronic agricultural product sales websites.

3.3.4 Website Resource Management Module

Including pictures, Word documents, flash, video and other resources to find, delete, upload, download, modify. Using cloud computing's powerful information processing capability, relevant sales data are extracted from the cloud platform back end for statistical analysis to form valuable information and provide decision support for businesses to improve sales volume and service level. References to pictures, documents and other resources in information can be easily removed and replaced. Can facilitate customers to have a detailed understanding of agricultural products and can make on-the-spot investigations. The payment method provides customers with a variety of alternative payment methods, such as bank remittance, post office remittance, cash on delivery, etc. Classified storage, removal and storage of audio and video resources, and online browsing function.

3.4 The Overall Design of the System

The core element in the software system is architecture, which fundamentally determines the quality of the entire website platform. Architecture is the basis on which other functional modules of the website platform must be built, and the actual needs must be met from all aspects [9]. Product search can be queried through products. The agricultural product sales vehicle can store agricultural products or products of interest that the user has photographed. Therefore, the characteristics of the two must be clearly recognized when designing the network security scheme. Give full play to the advantages of the two and use them together to build a secure network system. CMS system involves more complex business logic functions in the database. In order to meet the requirements of fast website platform construction, we generally adopt dynamic webpage technology. At the same time, the use scope and application attributes of CMS system itself also determine that this website platform can only adopt B/S structure. Supply and demand information is mainly some information trading platforms for buyers and sellers. In this information trading platform, according to the seasonal characteristics of agricultural products and other characteristics, the administrator allows the information to be kept for up to one month, and the information is automatically deleted after a delay.

CMS system adopts a three-tier structure based on B/S, which consists of data service layer, application service layer and presentation layer. The B/S structural framework is shown in Figure 2.

Fig.2 B/s Structural Framework

In the presentation layer, because the logical organization and placement order of the page content must follow certain principles, this structural layer can give the impression of a frame most obviously. A large number of detailed evaluation indicators are integrated, hoping to include every corner of logistics operation and detailed quantitative indicators to carry out in-depth evaluation and diagnosis of the entire logistics and other logistics companies' operations, and take the size of these indicators as the basis for analysis and inspection. The secondary server uses SQL Server Agent to copy transaction log files from the primary server transaction log folder; Another job restores the transaction log. For log shipping to work, it must use either a bulk log or a full database recovery model. Following the standardized mode, under the condition of ensuring the stability and safety of the system, the system is optimized to the maximum to improve the overall operation efficiency of the system. According to the user's request operation, the Web browser sends access request information to the Web server, and the Web server makes corresponding response to the information content contained in the request.

4. Conclusion

The construction of the above e-commerce website will greatly increase the sales channels of agricultural products, expand the customer base of agricultural products, and greatly reduce the

transaction costs and the burden of transportation. The design can effectively realize the integration of agricultural information, solve the problems such as poor expansion capability, no arbitrary editing, complicated information, disorder and the like of similar agricultural products e-commerce website platforms, and can save the cost of establishing websites. Through the agricultural product information network, agricultural product information will be transmitted to every online user in an all-round and rapid manner to promote the exchange and sharing of agricultural product information resources and accelerate the spread of agricultural science and technology. As well as the transformation of agricultural scientific and technological achievements and the promotion of agricultural technology. Combined with the agricultural product supply chain, the overall framework and functional modules of the agricultural product e-commerce platform are designed to provide support for the development of Chinese agricultural product e-commerce platform.

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