



Research on the Construction of a Comprehensive Service Platform for Chinese Medicinal Materials Information Based on Internet Big Data

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Abstract. In the development of Chinese medicine, Chinese medicinal materials are very important technical carriers, and their quality directly affects the therapeutic effects of Chinese medicine. Especially in the context of the fierce collision between Chinese medicine and Western medicine, how to improve the management quality of Chinese medicinal materials has also become an important source of promoting the development of Chinese medicine. This article analyzes the demand for integrated service management of Chinese herbal medicine information. The research content of this paper includes the production demand, business demand, management demand and service demand of Chinese medicine. Combining the advantages of Internet big data application, the author studied the key points of the construction of a comprehensive service platform for Chinese herbal medicine information. The purpose of this article is to improve the rationality of the content of the integrated service platform for Chinese herbal medicine information and promote the rapid development of the industry's economy.

Keywords: Internet Big Data · Business Needs · Management Needs

1 Introduction

Chinese medicinal materials, as raw materials of Chinese herbal medicines and proprietary Chinese medicines, have made outstanding contributions to health care and medical treatment. With the development of society, the medical model has been transformed into a combination of prevention and health care. “Return to Nature” and “Plant and Herbal Fever” are rapidly emerging. Chinese medicinal materials have received widespread attention and are popular in domestic and foreign markets. With the increasing interest in traditional Chinese medicine from all walks of life, the Chinese medicine industry has a bright future, but the quality and safety issues caused by the imperfect industrial chain

hinder the domestic and overseas markets. The traditional Chinese medicine industry chain is a linear value-added method, and each node is interlocked, and a chain reaction will occur if there is a quality problem in one link. To this end, from the perspective of the industrial chain, we need to propose a traceability system for Chinese herbal medicines based on Internet big data. Companies try to find out and solve quality problems by monitoring all links in the circulation of the traditional Chinese medicine industry. This will not only bring a new dawn to China's traditional Chinese medicine industry, but also provide a guarantee for the globalization of traditional Chinese medicine.

2 Analysis of the Demand for Integrated Service Management of Chinese Herbal Medicine Information

2.1 Production Demand

When carrying out comprehensive service management activities for Chinese medicinal materials information, the first task is to clarify production needs. This is also the basic condition for further improving the management service platform. The content that needs to be standardized in the specific content management includes the selection of planting varieties, the collection and planting of Chinese medicinal materials, the collection of Chinese medicinal materials, the processing of finished Chinese medicinal materials, the identification of Chinese medicinal materials, the grades of Chinese medicinal materials, the quality of Chinese medicinal materials, the transportation of Chinese medicinal materials, Demand for market development of Chinese medicinal materials. From the perspective of market development, Chinese herbal medicines also have the basic characteristics of co-products. It will follow the law of pricing based on quality. In the entire process of medicinal materials trading, if the quality of medicinal materials is low, the selling price will also shrink by 30%–40%. In this regard, the government also needs to do a good job of corresponding management requirements in the entire planting and processing of Chinese medicinal materials. Moreover, companies also need to control the contents of heavy metals, moisture and other substances in the medicinal materials so that the quality of Chinese medicinal materials can be maintained at a higher level. The selling price can also be increased by 5%–15% compared to the base price, creating more economic value.

2.2 Business Needs

When carrying out the comprehensive service management activities of Chinese herbal medicine information, it is also a very important application task to clarify the business needs. This is also an important condition for further improving the functionality of the management service platform. The content that needs to be regulated in the specific content management includes the market price of planted varieties, the market quotation of Chinese medicinal materials, the sales strategy of Chinese medicinal materials, the trading policy of Chinese medicinal materials, the marketing of Chinese medicinal materials, and the local support strategy of Chinese medicinal materials. From the perspective of market operation, in the operation process of Chinese medicinal products, because

of the excessive supply in the market, the market has “supply exceeds demand”. Even for high-quality Chinese medicinal materials, the price will be reduced by 15%–30%, and other quality Chinese medicinal materials will also be adjusted by more than 40%. For example, the harvest price of Huangju in 2019 is 5 yuan/kg, but with the increase in growers and the decline in demand, the purchase price will drop to 3 yuan/kg in 2020, and the shrinkage rate will exceed 60%. If the quality of the medicinal materials is poor, the price of the product will drop further. This also has a greater economic impact on rural businesses. Therefore, companies also need to do a good job of management during the entire planting and processing of Chinese medicinal materials so that they can meet the requirements of Chinese medicinal materials market transactions. Meanwhile, companies also need to do a good job in quality management to create more economic value for market operations.

2.3 Management Needs

It is also a very important application task to clarify the management requirements when carrying out the comprehensive service management activities of Chinese herbal medicine information. This is also an important condition for optimizing the functionality of the management service platform. The content that needs to be standardized in the specific content management includes the seedling of planted varieties, the fertilization of Chinese medicinal materials, the irrigation of Chinese medicinal materials, the processing of finished Chinese medicinal materials, the marketing of Chinese medicinal materials, the prevention and control of Chinese medicinal materials diseases and insect pests, the quality of Chinese medicinal materials, and the market management needs of Chinese medicinal materials. From the perspective of market management, the quality of Chinese medicinal materials is also low due to the fact that the basic conditions of the soil are not false, the improper use of pesticides, and the excessive amount of fertilization during the operation of Chinese medicinal materials. When the company sells it, the price will also shrink severely, and the general shrinkage rate remains at 30%–40%. However, medicinal materials with excessive pesticide residues cannot be traded, which directly brings about a large and bad economic impact. In consequence, companies also need to do a good job of management in the entire planting and processing of Chinese medicinal materials. Moreover, companies also need to control the content of heavy metals, moisture, pesticides and other substances in the medicinal materials so that they can meet the trading requirements of the Chinese medicinal materials market. In the meantime, companies also need to do a good job in quality management so that they can maintain a high quality state. In this way, the price can also be increased by 5%–15% from the base price, creating more economic value for market operations.

2.4 Service Requirements

When carrying out the comprehensive service management activities of Chinese herbal medicine information, it is also a very important application task to clarify the service requirements. This is also an important condition for optimizing the functionality of the management service platform. The content that needs to be standardized in the specific content management includes the regionally differentiated services of Chinese herbal

medicines, the professional services of the transaction process, and the real-time processing of the transaction process. From the perspective of market management, due to the geographical differences and the differences in the medicinal materials themselves, the price fluctuations of 10%–30% may also occur in the process of market sales of Chinese herbal medicine products. Under normal circumstances, the price of Chinese medicinal materials in the place of origin will be lower than that in other regions. Besides, strengthening the delivery management of medicinal materials in the application can make it meet the transaction requirements of the Chinese medicinal materials market. Simultaneously, companies also need to do a good job in quality management so that they can maintain a high quality state. The basic price of a company can also increase by 5%–15% compared to the previous purchase price. This also optimizes the market operating environment and increases the economic benefits brought by important material products.

3 Advantages of Internet Big Data Application

In the application process of Internet big data, it has the following application advantages. Firstly, the data collection speed is faster. Enterprises can use the convenience provided by Internet technology to complete data and information collection faster. Moreover, the technology itself has certain data preprocessing capabilities, and companies can speed up data processing by 30%–40% to meet data collection requirements. Secondly, in the process of data information collation, the collected data can be further processed by relying on Internet big data. At the same time, enterprises can complete the classification processing of the product information of Chinese medicinal materials in accordance with the classification requirements, and establish a corresponding database to complete the information storage. This facilitates the smooth extraction of data and meets the established application requirements.

4 Key Points of the Construction of a Comprehensive Service Platform for Chinese Herbal Medicine Information

4.1 Overall System Design

4.1.1 Network Architecture Design

When building a comprehensive service platform for Chinese herbal medicine information, the first task is to do a good job in network architecture design. As shown in Fig. 1, in the process of architecture design, its content includes two parts: the server side and the mobile side. When designing the system on the server side, PHP is mainly used as the server side of the entire system, responsible for system sorting, ordering, and information screening. The database module uses My SQL to complete, which can be compatible with a large amount of data information to meet the data extraction requirements in different situations. The system can choose Apache virtual server as the web service container on the server side to meet the requirements of different situations. The mobile client can use Internet big data technology to use AJAX to complete the

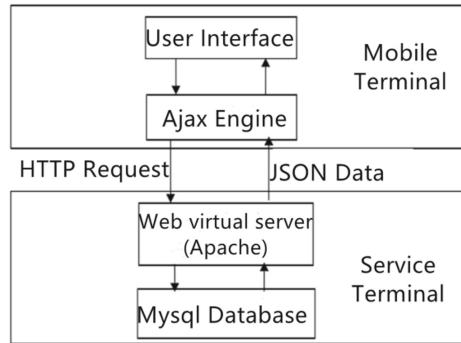


Fig. 1. Network Architecture Diagram

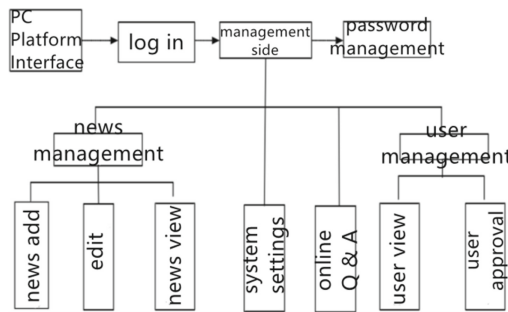


Fig. 2. Overall Architecture Design Drawing

data information request in the design. The client will also process the data format after receiving the data information. The commonly used format is JSON format. It can thus meet specific application requirements [3].

4.1.2 Overall Architecture Design

It is also necessary to do a good job in the overall architecture design when constructing a comprehensive service platform for Chinese herbal medicine information. As shown in Fig. 2, in the process of architecture design, the content can also be divided into mobile phone and computer side design. In order to improve the efficiency of the system itself, the system adopts a more popular architecture model. In the PC terminal equipment design process, its content also includes three parts: basic news management, user management and system management. The entire management process also has a certain degree of complexity, and the Internet big data is used to complete the parameter arrangement to meet the needs of background routine operations. In the initial running state of the entire system, we need to check the system application version. If there is a new version change, the staff also need to upgrade the version as required. After logging in, users can query related information, and at the same time, they can also set up information and passwords to meet the corresponding management requirements [7].

4.1.3 Software Function Design

In the design process of the entire system, software function design is a very important design content. The specific functional content included is as follows. (1) User registration function. On the integrated service platform, all users have independent accounts. Meanwhile, the system can change personal information, login password, delivery address and other content according to needs, which has a strong use value. (2) System announcement function. The system publishes and pushes relevant announcements according to the current operating status of the website and according to its own needs, so that users can obtain the required information more quickly. (3) Planting technology module. It can provide planting technology, management technology, transplanting technology, pest control technology of common Chinese herbal medicine plants. This also provides an effective reference for the standardized cultivation of Chinese herbal medicine. (4) Market development trends and policy news. Its content includes the current development status of the industry. It can sort out market trends and market development needs to achieve a smooth transformation of economic value. (5) Grade appraisal. It can not only provide common methods for quality identification of Chinese medicinal materials, but also provide a reference for the classification of Chinese medicinal materials, creating more economic value [6].

4.2 System Development Points

4.2.1 Business Modeling

In the process of system optimization and development, business modeling belongs to the basic management content. In the process of specific application, the system will use the software model to describe the objects and elements involved in enterprise management and service business. Moreover, the system will also organize its attributes and relationships to complete the establishment of the information system. In the specific modeling process, the frequently used business models are shown in Fig. 3. Its content includes three modules: front-end module, PHP end and database. In the foreground module, the business content provided by it includes functions such as column content viewing, news content viewing, and news data list. When the system is viewing the column, list.html will use AJAX to complete the content search, thereby improving the convenience of the search process. In the background module, the business content it provides includes news content addition, news content viewing, and organization data Web Service provision. The database will store the required application information to lay the foundation for subsequent data information extraction [8].

4.2.2 Data Modeling

Enterprises also need to do a good job of data modeling when designing system content. Based on past application experience, companies can use three-element data models as the main data model used in the process of data model establishment. That is, data structure, data operation mode, and data integrity. When staff are designing the system database, the design content includes column tables, news tables, version content, user tables, data log tables, and data hits. In the column table, its main function is to display

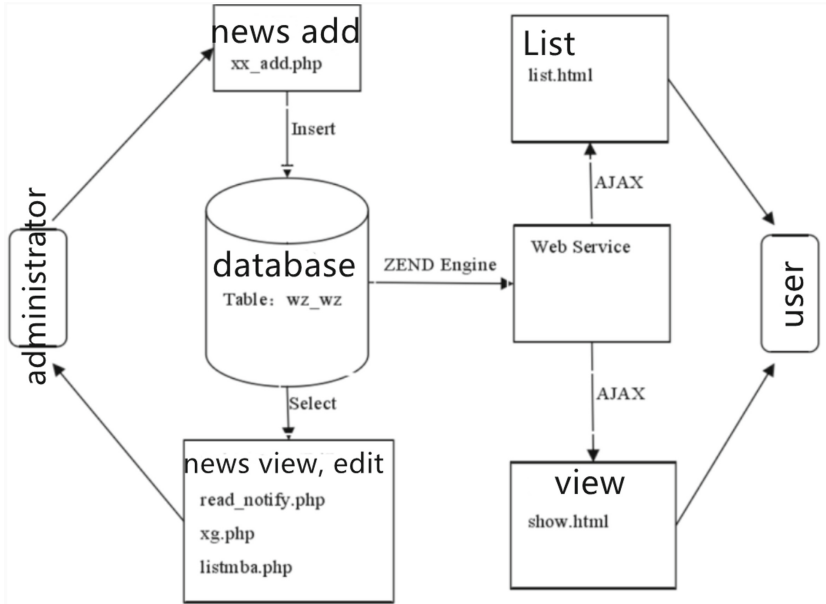


Fig. 3. Business Model Diagram

the sequence of the column menu. In the distribution of the data collection sequence, its content includes the data serial number, data number, and data name. The data items of the wz_menu table will be set up in advance according to the requirements during the application process parent_id (parent number). This is also the numbering content that needs to be paid attention to in the process of data information query. This can improve the convenience of the data information query process and meet the basic needs of rapid information extraction [5].

4.2.3 Process Modeling

Enterprises also need to do a good job of process modeling when designing system content. Based on past application experience, in the process of establishing a process model, companies need to clarify the basic conditions of the information query process. Take news viewing as an example, the process is shown in Fig. 4. After logging in to the integrated service platform for Chinese herbal medicines, users can make selections based on the content of the modules listed on the page. If there are news tips in the scrolling subtitles on the column, the user can directly click into it to view it. If there is no required news content on the rolling captions, then the user can enter the query conditions in the search box. The user selects the desired news from the feedback results obtained, and completes the news review. In addition, if the required column type is not in the list, the user can click more options at this time. Users can select the news options they need to view, and get the news content they need to view [2].

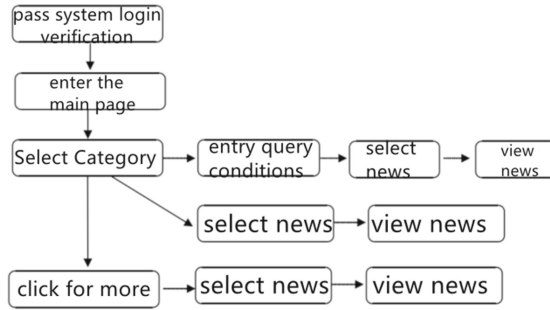


Fig. 4. News Query Flow Chart

4.2.4 System Implementation

In the design process of the system realization module, its main content includes R&D environment processing and application generation processing. The specific content includes the following points. Firstly, the hardware system. In order to meet the requirements of platform operation, the version cannot be lower than the tenth generation i7-4300U, and the server CPU also needs to be controlled at 2.50 MHz, and the operating system selects 64-bit Windows series. This can meet the application requirements when the system is running and processing. Secondly, the software system. In order to meet the basic requirements for the stable operation of the system, the software version PHP Version 5.1.1 or higher is selected, and the most technical content used in the whole process is AJAX technology. The database chooses Navicat Premui11.1.13 (64-bit)-premui, which has stable working performance and storage space. Thirdly, performance testing tools. The commonly used tool type is Load Runner series. It is a framework test tool, which can meet the corresponding management requirements [1].

4.3 System Test Analysis

When conducting system testing, its main contents include platform delivery quality, project information reliability, and software and hardware resource allocation. During the test, the content of the system Action_Transaction is recorded. At this time, the content of the Vuser_int_Transaction and Vuser_end_Transaction are displayed as empty. At this time, the time consumed by the Action script running process is also the time consumed by the Action_Transaction running process. According to the script time, the average script time is 3.23 s. The response time of the login interface is 1.75 s, which meets the expected effect requirements [4].

5 Conclusion

In summary, the Chinese herbal medicine industry is a traditional industry in China. Chinese medicinal materials are recognized by the world because of their rich resources, long history, and unique curative effects. However, the backward management of circulation links and the problems in the industrial chain directly affect the quality of Chinese

medicinal materials and the level of competitiveness in the world market. In order to achieve better development, we should make full use of the convenience brought by the big data era to establish a sound supervision and management mechanism, and realize informatization and standardized management. We need to fully integrate online and offline to lay a solid foundation for the sustainable development of the Chinese herbal medicine market. This can further promote China's traditional advantageous industries to the global market.

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