Construction of Agricultural Economic Management Information Service Platform Based on Cloud Computing

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Abstract: With the advancement of our country's computerization process and the widespread application of cloud computing technology, the establishment of an agricultural enterprise management information service platform can integrate agricultural information resources and promote agricultural product transactions. The rapid development of the internet and information technology has increased the productivity and information consumption of many people. In this information age, websites are showing a trend of geometric growth, and users can easily publish and access various information. This article mainly introduces Page Rank algorithm and K-step algorithm. This paper uses cloud computing to study the construction of agricultural economic management information service platform, and establishes a potential mathematical model. The model is solved by Page Rank algorithm and K-step algorithm, and the status of the agricultural economic management information service platform is studied, and the model is revised using historical data to improve the accuracy of the evaluation of the agricultural economic management information service platform. The experimental results of this paper show that the Page Rank algorithm and the K-step algorithm make the research efficiency of the agricultural economic management information service platform 13%, and reduce the false alarm rate and the false alarm rate. Finally, by comparing cloud computing business analysis and LZ0 data compression analysis, the system explains the impact of cloud computing on the construction of agricultural economic management information service platform.

1. Introduction

1.1 Background and Significance

Since cloud computing is an emerging technology, there is nothing in common among universities. Usually, this is a method called “cloud + terminal” [1]. It aims to realize resource sharing by transmitting large amounts of data, software and hardware, and the resources users need to store them on the Internet, and allows customers to connect and download through their terminal devices [2-3]. Therefore, this type of storage breaks the limitations of time and space, and can download necessary resources through the network anytime, anywhere. But at the same time, basic technology and application technology equipment are deficiency, and the entire infrastructure system needs to be hoisted continuously [4-5]. Although the current domestic competition on the internet promotes services related to cloud computing technology, it still cannot meet the needs of the market and users. At the same time, the market and companies have insufficient understanding of the commercial value and application criteria of cloud computing technology, so there is no proper communication between service providers and the efficiency is not high [6]. Entering the new era, my country has accelerated the construction of a new socialist countryside, built successful communities in an all-round way, and new conditions have emerged in rural residential areas. Therefore, the municipal government and agricultural economic authorities must adapt to the needs of the new era. At this stage, they must have a clear understanding of the current rural economic

development and use cloud computing to accelerate rural economic reforms.

1.2 Related Work

Guo F provides a method to evaluate participatory stakeholder innovation in a complex stakeholder environment to solve essential problems [7]. agricultural economic management information service platform. stakeholders integrate their resources and capabilities to develop innovations Page Rank algorithm and K-step algorithm [8-9]. This case represents the significance of cloud computing for the construction of agricultural economic management information service platform and system implementation [10-11].

1.3 Main Content

The innovation of this article lies in the Page Rank algorithm and the K-step algorithm. Based on the research on the construction of agricultural economic management information service platform under the background of cloud computing, the construction of agricultural economic management information service platform is evaluated through cloud computing. Establish the calculation methods of Page Rank algorithm and K-step algorithm to guide the research of agricultural economic management information service platform under the background of cloud computing.

2. Methods for the Construction If a Cloud Computing-Based Agricultural Economic Management Information Service Platform

2.1 Page Rank Algorithm

The basic steps of the Page Rank algorithm used to calculate the PR value have two steps: the beginning and iteration of the PR value. Initially, each page on the network card is set to a PR value, which is equal to the initial value of the iteration. Repeat one round, the PR value of each page will also change and get the updated value. In the new review round, each webpage will evenly distribute its PR value to outbound link pages, so that the generated link website will receive a part of the PR value of each inbound link website for collection. The new value created by repeating the loop, that is, the condition for stopping the repeat is that the PR value of all pages on the Internet will not change or the threshold will not be reached. If it is below the threshold, it can stop recurring.

In order to formally generate the above ideas, we can regard the Internet as a graph G = (V, E), where V is located at the node of the graph (each website page is a node, ignoring the concept of graphs), and E is the graph set and marked Edge (If the number on page A is connected to B, the point from A to B is represented by (V, V)). Make sure that all pages on the network are n (ie n = | V |). Assuming that there is a link to website i on website j, the formula is as follows:

$$PR_i = \sum_{j \in B_i} \frac{PR_j}{L_j} (1)$$

Among them, PR is the level of page i, and L is the number of links other than page j. B is a collection of page links pointing to website i.

2.2 K-Step Algorithm

Each iteration of the page ranking algorithm requires access to the distributed file system, which increases the high input cost and reduces the total algorithm, repetition time and speeds up the aggregation. In order to simplify the calculation of the new algorithm, the vector calculation is expressed by the result of KT iteration (K + 1 iteration method), the formula is as follows (2):

$$PR_{K+1} = (1-d)I + dMPR_K \ k \in (1,2,3....)_{(1)}$$

Among them, the column weakness of the nth view is called PR. It represents the page rank value (PR(1), PR(2),,, PR(n)) of n webpages after the kth repetition.

3. Experiment on the Construction of a Cloud Computing-Based Agricultural Economic

Management Information Service Platform

3.1 Experimental Design of Cloud Computing in the Construction of Agricultural Economic Management Information Service Platform

At present, the growth and completion of cloud business at home and abroad will undergo rapid changes. However, it is obviously not enough to pay attention to my country's crop news. Strengthen cloud computing research and use rural data resources to provide better theoretical support for the innovative development of functional agricultural models. Adopt new global cloud business processes and the use of Internet-based services and solutions, and use mature and stable SAS model operations to create quick and convenient access to government information, resources, and farmers.

Using the most advanced information technology in the cloud computing system, and targeting farmers, create a comprehensive agricultural enterprise information service model that can meet the needs of my new country to build a country. Combining rural knowledge, the needs of agriculture and farmers, starting from the needs of agricultural production and the level of rural development, based on the development and improvement of cloud technology, build a new type of rural architecture in my country. Farmer participation, expert consultation and information sharing, data storage, management of farmers and other enterprises, and new models of agricultural information services for agricultural products.

3.2 Data Collection of Cloud Computing in the Construction of Agricultural Economic Management Information Service Platform

In this article, we choose research methods to use new technologies to ensure computer efficiency and customer satisfaction when establishing agricultural data management service platforms. Currently, the most common type of agricultural product isolation is the electronic catalog system. The electronic catalog system can be divided into four main modules: product database, product classification, product search and product display.

Customers are accustomed to traditional retail transaction systems and accounting systems, while online merchants are not flexible in this regard. Traditional companies need to physically classify products, so they can only place products in one place based on consumer search categories. However, more and more online stores are moving away from the traditional method of grouping consumers and organizing manufacturer products. When customers enter the store, they will see a special booth of the brand. It can satisfy consumers who buy by manufacturer and brand.

Next, we will investigate the four aspects of customer satisfaction, employee satisfaction, work efficiency and error rate between the electronic catalog system used by cloud computing in the agricultural economic management information service platform and the traditional retailer classification. The data results are shown in Table 1:

Table 1 Construction Data Table of Electronic Catalog System and Traditional Retailer Classification

Compare items	Customer satisfaction	Employee satisfaction	Work efficiency%
electronic content	98	88	80%
Traditional retailer	87	78	55%

It can be seen from Table 1 that the customer satisfaction and employee satisfaction of the electronic catalog system are higher than those of traditional retailers. At the same time, the efficiency of the electronic catalog system is higher than that of traditional retailers. From this point of view, people are accepting cloud computing electronic catalogs relatively quickly. The analysis results are shown in Figure 1:

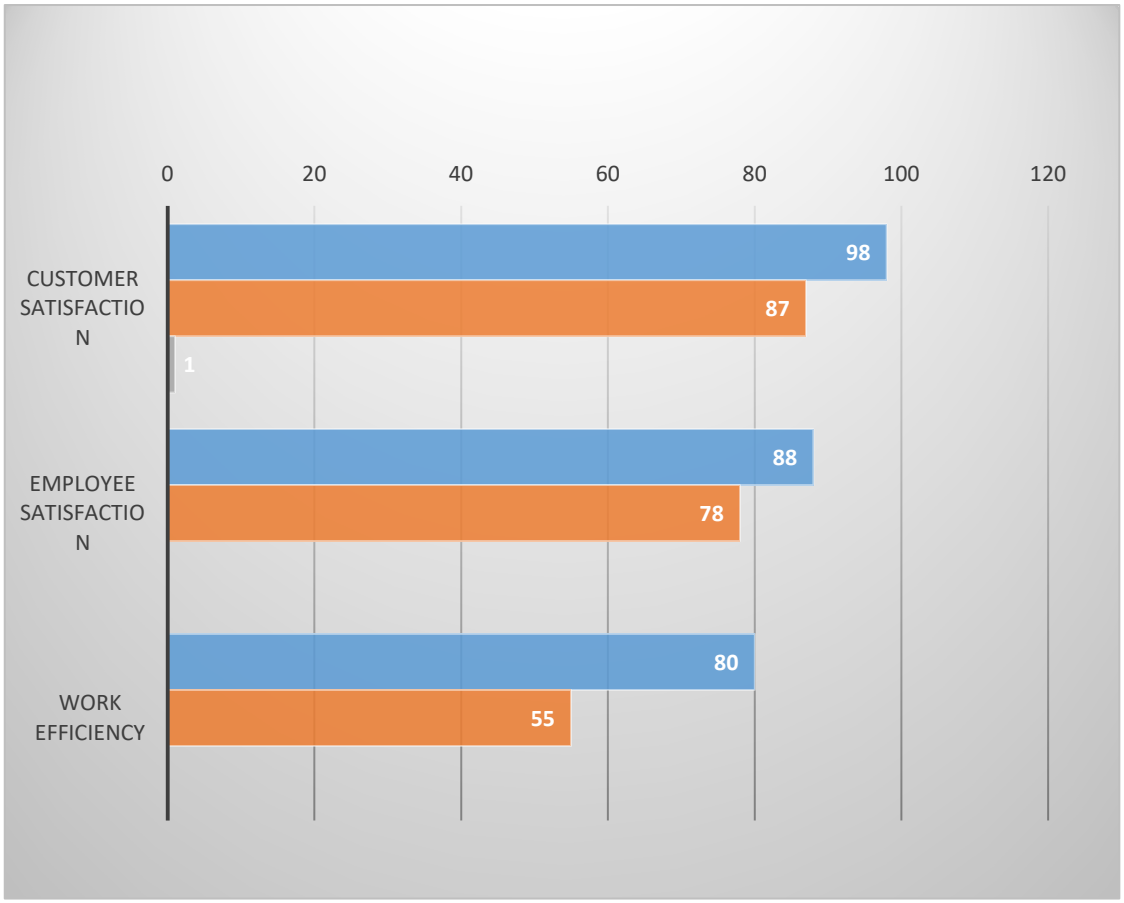

Fig.1 The Construction Data Diagram of the Electronic Catalog System and the Traditional Retailer Classification

As can be seen from Figure 1, the electronic catalog system built by cloud computing improves customer satisfaction. At the same time, for employees, such an electronic system will greatly improve their own work efficiency. Therefore, employees are the popularity of the electronic catalog system continues to soar. This also verifies that cloud computing is conducive to improving the quality and level of agricultural economic management information services for agricultural economic management information service platforms.

4. Construction of a Cloud Computing-Based Agricultural Economic Management Information Service Platform

4.1 Business Analysis of Cloud Computing

Many small and medium-sized enterprises need to use some heavily visited sites to sell agricultural products, initiate attractive competition on the cloud search platform, and rely on the “pull” operation of customers to complete the URL aggregation Web server that follows the employees. Google, Yahoo and Baidu have already begun to receive structured data sent by small webmasters. Structured data has become the technical foundation of content marketing, first search engines, then consumer search engines. Search engines are responsible for collecting and distributing structured data. In this regard, professional semantic search engines are more important.

Facts have shown that the “information flow in regular web pages” is very complex and inefficient, so deep web search engines provide a rule: allow subsites to submit organized data so that it can be included in the search engine's database. straight. In addition to the product data provided by the manufacturer, there are also compatibility issues. Since the supplier must distribute the products of many manufacturers, if each company provides a different .data data format, it will not be a small burden for the supplier.

4.2 Lzo Data Compression Analysis

In addition to reducing the amount of data in the calculation process through digital mapping, considering that we always need to compress files when transmitting data every day, this article also wants to know whether we can consider decompressing the calculated data to realize that the inserted data will become dense Data transmission, and the time to decompress the data is less than the transmission time without decompressing the data. Therefore, this article considers the adaptability and compression efficiency of several compression methods under the Hadoop platform. The data results are shown in Table 2:

Table 2 Hadoop Platform Data Compression Data Table

Compression algorithm	Original file size	File size after compression	Compression speed	Decompression speed
gzip	8.3GB	1.8GB	17.5MB/s	58MB/s
bzip2	8.3GB	1.1GB	2.4MB/s	9.5MB/s
LZO	8.3GB	2.9GB	49.3MB/S	60.6MB/s

Compared with the above table, using the LZO compression algorithm on the bones can reduce the size of the disk and the time required to read and write data from the disk, so the bone functions can be divided according to the block distribution. Not only that, 1zo also considered design issues, its download speed is twice that of gzip, which allows it to save more disk read and write operations. Although the amount of compression may be different from gzip, the number of compressed files is close to gzip. This allows the data to be broken down into combinations and processed in Hadoop. the analysis results are shown in Figure 1:

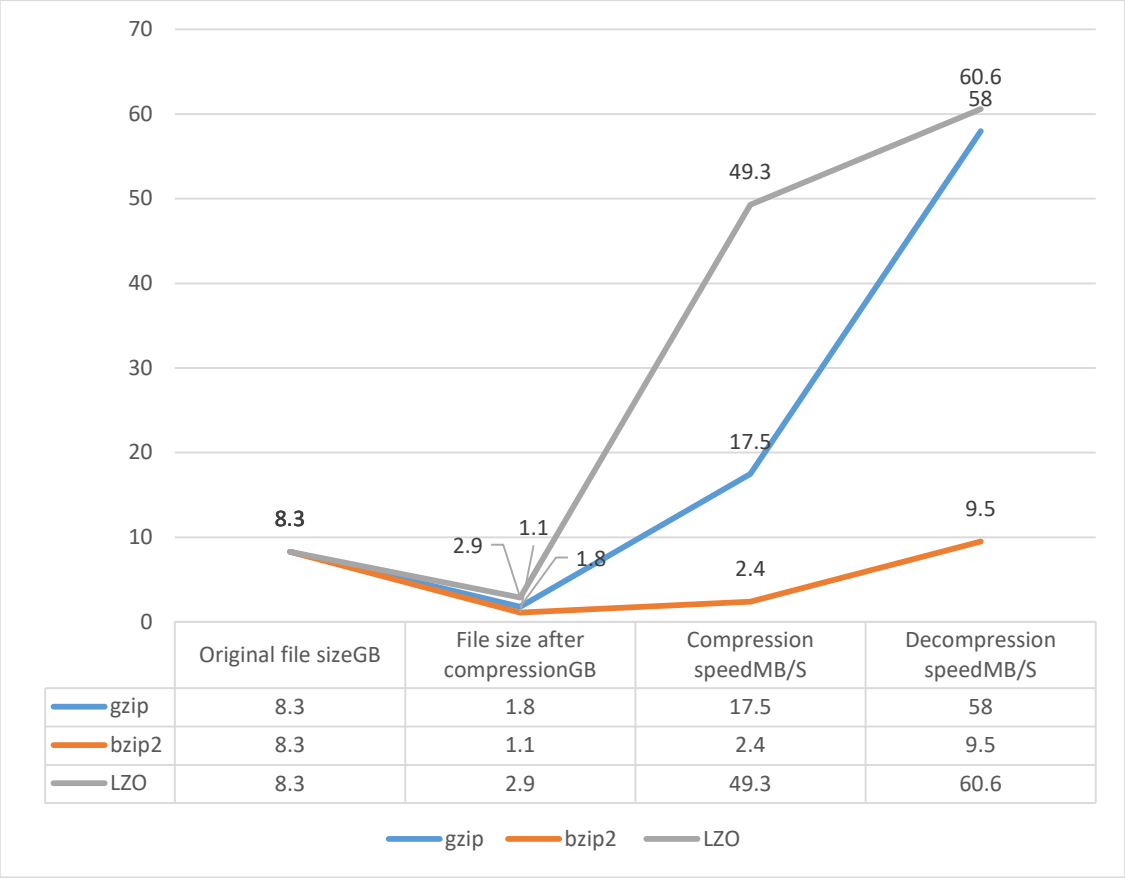

Fig.2 Data Compression Diagram of Hadoop Platform

As shown in Figure 2, based on the Hadoop-LZ0 compression algorithm, the compressed data can be divided into multiple blocks and processed in parallel, and the decompression speed is fast.

The Hadoop-LZ0 compression algorithm is used to decompress data in the PageRank calculation process. Although MapReduce applications use uncompressed data for reading and writing, they can benefit from compressing the intermediate output of the mapping process. Since the output of the folder job will be written to disk and transmitted to the gearbox via the network, if fast LZO compression is used, the amount of data transmitted will be greatly reduced, so that better results can be obtained.

5. Conclusions

Although this paper has made certain research results on Page Rank algorithm and K-step algorithm, there are still many shortcomings.

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