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The Application of Agricultural Resource Management Information System Based on Internet of Things and Data Mining

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ABSTRACT To promote the progression of information management of agricultural resources in China, the present situation of agricultural management model in China is introduced, and an information agricultural tracking model based on Internet of Things (IoT) is proposed according to the characteristics of production flow of agricultural products. Then, the progression level of agricultural mechanization in China is analyzed based on data mining, and some suggestions are given. The research results show that in the four links of production, processing, transportation, and sales, the agricultural products tracking system in this study can simultaneously deal with more than 800 events per second when conducting information query. When the number of users reaches 20, the response time is 0.021 seconds. When processing messages sent by 100 users simultaneously, the response time is only about 0.12 seconds. When 160 users are sent to the system at the same time, the response time is less than 0.2 seconds. As the number of users sending messages at the same time increases, the response time remains within 0.3 seconds, although delayed. This system can effectively complete the agricultural commodity information tracking, with good performance, query speed, and high accuracy. The agricultural products tracking model in this study is very powerful to complete the information tracking of agricultural commodities, with good performance, fast query speed, and high accuracy. In summary, IoT and data mining are applied to agricultural resource information management, and the analysis and experiment are carried out. The results provide some ideas and references for the research of related technologies in agricultural management and progression.

INDEX TERMS Internet of Things (IoT), data mining, agricultural resource Management, system optimization.

I. INTRODUCTION

With a vast territory and a large population, China is a famous agricultural country in the world. As the economic foundation of China, agriculture has always been valued by the government. The annual release of agricultural production policy has been the first in a number of policy documents. The concept of smart agriculture is a link in the government's plan to improve the quality and production efficiency of agricultural products in view of the existing problems in China's agriculture [1]. Smart agriculture is a new type of fine and information management mode, which aims at intelligent control of agricultural production and circulation [2]. There are many management problems in traditional agriculture,

such as that its transaction data is widely distributed, the types of nodes are diverse, and the transaction network is complex, which increase the difficulty of distinguishing the authenticity of the product information displayed on the package [3]. It is difficult to determine the authenticity of agricultural production process information, and it is difficult to let consumers rest assured to buy and use. Traditional technical traceability authentication adopts the centralized accounting model. Therefore, in the process of traceability, it is easy to be controlled and changed by human factors. It is difficult for approach to establish a high degree of acceptance and recognition among the public. With the progression of Internet of Things (IoT), the emergence of blockchain provides new technologies and models for the production and sales of traditional agricultural products. The use of the features of "data transparency" and "transaction traceability"

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of blockchain can effectively solve the traceability problem and enable manufacturers and distributors to have a more accurate way of traceability, which provides a guarantee for consumers' consumption security [4]. By applying the product traceability model, high-performance, high-yield designs, as well as farmers' working conditions, types of pesticides used, self-ordering, and customer growth can be checked at any time [5]. Through a series of measures, the traceability of agricultural products is enhanced, and the quality and safety of agricultural products are greatly improved. The use of advanced technologies such as blockchain, IoT, RSSI location, and anti-tag counterfeiting has been a key driver [6].

Agricultural mechanization is a necessary process of agricultural technological change and economic progression of agricultural production. Agricultural work is carried out by replacing human and animal power with machinery and equipment. The popularization of agricultural machinery in agricultural production has brought about fundamental changes in the mode of agricultural production and promoted the significant increase of agricultural labor productivity and land productivity. While promoting the progression of global agriculture, it reduces the agricultural population [7]. In addition, it effectively guarantees food security, liberates human resources, promotes the division of social production, promotes other important professions in the progression of industry and service industry, and promotes the further prosperity and progression of the world economy [8]. Because most fresh agricultural products are fresh, edible, and difficult to store in production, circulation, and consumption, the supply chain of fresh agricultural products is obviously different from that of general industrial products. According to the modern supply chain development frontier theory, starting from the characteristics of fresh agricultural products, this work is combined with modern information technology, integrating the theory and practice. Then, this work analyzes the existing research results of supply chain theory. In view of the current shortage of fresh agricultural supply chain, this work uses information technology theory, system engineering theory, and supply chain management theory and other related basic theories to analyze and study the operation mechanism of fresh agricultural supply chain. From the development of fresh agricultural supply chain traceability to the study of fresh agricultural supply chain traceability system, this work analyzes the role of fresh agricultural supply chain traceability on society and economy, and analyzes the problems and internal and external environment in the development of fresh agricultural supply chain traceability system. To increase the support for the development of fresh agricultural supply chain traceability system, this work puts forward specific safeguard measures and explores a set of efficient information system suitable for the traceability requirements of fresh agricultural supply chain. The innovation of this study lies in the refined management of agricultural resources based on the concept of smart agriculture. To promote the development of smart agriculture in China, the Internet of Things technology and data mining technology are applied to agricultural management,

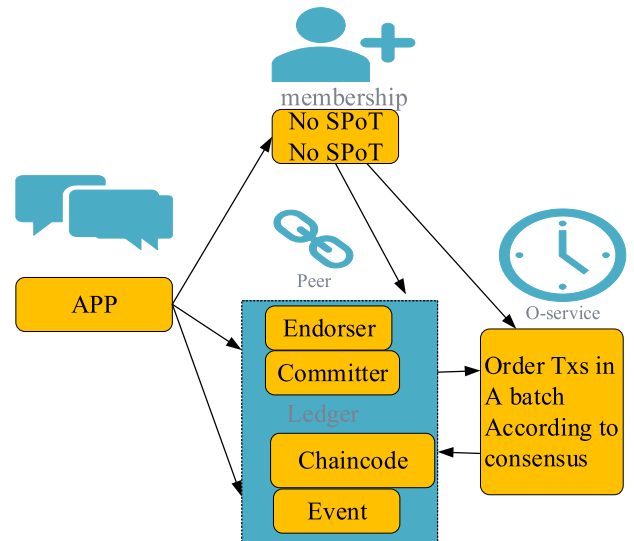


FIGURE 1. The basic architecture of fabric.

and a traceability system based on agricultural commercial information is proposed, to promote the development of smart agriculture in China.

In this study, the adoption of IoT and data mining in agricultural resource information management is discussed in the context of agricultural information management. Two different functional models are designed based on IoT and data mining. Experiments are designed to verify the performance of the two. Finally, according to the experimental results, two suggestions are given for agricultural information management and agricultural progression in China.

II. THEORY AND METHOD OF AGRICULTURAL RESOURCE MANAGEMENT RESEARCH

The progression of IoT and computer has been applied to all aspects of people's lives. Wu *et al.* (2018) combined IoT with smart transportation and proposed a mobile-based barrier-free transportation service platform that provides convenience for the elderly and the disabled to travel [9]. In this research, IoT-related technologies and data mining technologies are combined and applied to agricultural resource production and management. This section introduces the research techniques and theories involved in this research.

A. IoT RELATED TECHNOLOGIES FOR AGRICULTURAL RESOURCE MANAGEMENT

Hyperledger is an open source blockchain project launched by the Linux Foundation in 2015. Due to the nature of P2P networks, distributed ledger is completely shared, transparent, and decentralized [10], [11]. The members of Hyperledger Foundation include IBM, Intel, Cisco, and many other well-known manufacturers. Many blockchain projects originated from this. The most famous of these projects is Fabric. The Hyperledger used in this study is based on Fabric. The basic architecture of Fabric is shown in Figure 1.

In Figure 1, Fabric nodes are classified into client nodes (clients), peer nodes (peers), and (Order) ordering node. The role of the client node is directly providing services to customers, helping users, and creating and calling transactions. It can communicate directly with peer nodes and ordering nodes [12]. The peer node manages the registry, receives update messages commanded by the control node, and sends new transactions to the registry. A guarantor is a special type of peer node that performs the task of authorizing transactions by verifying whether certain necessary and sufficient conditions are met (for example, providing a necessary signature). The ordering node provides a communication channel between the client node and the peer node to broadcast messages containing transactions [13]. In most cases, in order to reach a consensus, these channels ensure that all connected peer nodes deliver exactly the same messages in exactly the same logical order.

The bottom layer of the Internet-based agricultural monitoring and management model records data through IoT and the client and updates the records in real time [14]. To ensure the immutability and transparency of information at the time of recording, existing research usually uses blockchain to upload data to the previous blockchain in time and transmit it to the cloud. The most common blockchains today are public chains such as Ethereum and Bitcoin. In addition to public chains, there are two types of private chains and consortium chains. The characteristic of the public chain is that it is completely decentralized, but it is difficult to implement. The public chain is not a private channel, so there is a risk of leaking company information. The private chain is privatized, but because it can't display information to users, it is difficult to solve the user's trust problem [15], [16]. Based on the above analysis, Hyperledger is used to build a blockchain, which not only responds to the demand for non-scalable information, but also shows the traceability results to users while ensuring the confidentiality of company information.

The IoT-based agricultural traceability management model has user terminals that support different scenarios and different types of users. Therefore, a flexible architecture is needed to adapt to the progression of subsystems with different functions [17]. In this research, the monolithic architecture built by Spring Boot is used as the architecture foundation. Spring Boot is an abstract progression framework that contains many XML configuration files. The main features of configuring Spring Boot are as follows. The first is independence. Spring Boot can run independently in a jar package and perform functions without the assistance and cooperation of other files. The second is simplicity. Spring Boot provides a series of boot poms to simplify Maven dependencies. The third is automaticity. In most use cases, Spring Boot will automatically configure beans for packages/class jars in your project's classpath, which greatly simplifies work. The fourth is adoption monitoring. It can monitor Http and other projects at runtime through Spring Boot [18].

In the research phase of the demand for agricultural tracking management model, due to the continuous growth of

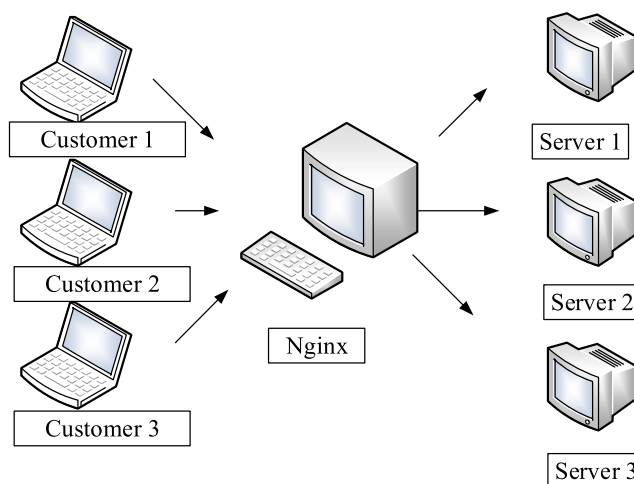


FIGURE 2. Nginx structure.

IoT users, cloud networks need to continuously process many information and data, which will cause great pressure during peak periods [19]. The model that needs to be built should adapt to this high-concurrency and fast-responsive working state. Therefore, Nginx is chosen to build load balancing, reverse proxy, and cache acceleration. The distributed deployment of Nginx can well solve high traffic access restrictions. When it functions as a reverse proxy, it actually acts as a server for distributed deployment scenarios of server clusters and hides server information. The bandwidth of the reverse proxy export is limited, and the website cannot access this area for various reasons [20]. In this way, it can ensure the security of the model. The schematic diagram of Nginx reverse proxy is shown in Figure 2.

The Internet-based farm IoT tracking model must be able to adapt to the wide distribution of users, and it should have specific document transmission and download functions. In addition, it should have the function of viewing the status of the farm in a map. This function must be refined to be able to view the pictures and data information forwarded through the Internet and the client in real time [21]. Based on the above requirements, a content delivery network (CDN) is used to meet the above functional requirements. It supports frequent user access and has a strong acceleration effect on static resources (such as images, media, and files). CDNs, such types of network services, have the function of automatically identifying and avoiding links and problems that affect transmission [22]. It can overcome the limitations and bottlenecks of the original transmission and make the information safer and more reliable when it is transmitted online. CDN is different from mirroring in that it has higher intelligence and can make the information flow on the Internet faster and more efficient. In addition, CDN also has some other functional advantages, which are summarized as follows.

I. CDN has a cross-network connection function, which can fully connect operators and inter-regional network coverage at the same time. It can break through the geographical restrictions of interconnection and non-interconnection, and

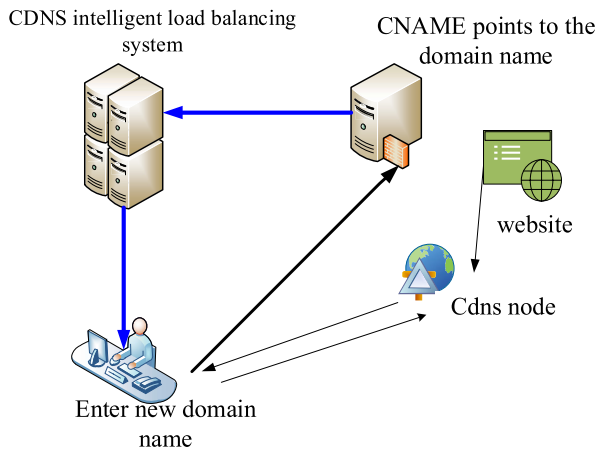


FIGURE 3. CDN response process.

local ISPs, so as to achieve network connection on a global scale and expand IDC resources. It can rationally develop through CDN at central nodes across the country, and distribute storage to the edge to achieve network coverage [23].

II. CDN load balancing and distributed storage can improve the security of the website and can avoid malicious intrusions and network attacks from external networks to a certain extent.

III. It has good fault tolerance. If the server is accidentally damaged and can't operate normally, the model can automatically call the nearby normally running server to temporarily process the information until the server is completely restored. Therefore, the work of the entire server can be kept in a healthy and stable state [24].

IV. With complete services and clear features, CDN acceleration providers provide one-stop services in most cases. The service not only provides CDN services, but also cloud storage services and corresponding big data services, as well as monitoring, operation, and maintenance services. When users use it, they don't need to consider other factors, but only pay attention to the CDN's own business.

The response process of the CDN is shown in Figure 3.

The last one is IoT Mybatis, which is mainly applied to the persistence layer of the agricultural tracking management model of IoT. It simplifies the use of relational databases for common SQL queries. In terms of writing code, the amount of code is reduced. It also realizes the interface binding, and there is no need to directly create the DAO implementation class. MyBatis is the simplest, most compact, and easiest to learn persistence framework, and will not affect the design of existing programs and databases [25], [26]. Because it is in XML format, it is completely decoupled from the program code, which has the characteristics of low coupling. During maintenance and optimization, there will be no associated reaction or other failures.

Mybatis application comes from Joe Shining mybatis-config. The xml configuration file (java file configuration method, add (^configure) is used, and SqlSessionFactory

is built. Then, a SqlSession instance is added, and the SqlSession database is called to implement the mapping and run the mapping from SqlSession, delete, edit, verify, and close SqlSession [27]. The detailed process for implementing Mybatis is as follows.

I. Mybatis global configuration file is read, including the data source file and mapper mapping file. Then, the configuration file is analyzed and configured. Mybatis generates configuration files based on XML configuration files, one of which is generated by MAP Ped Statmeter.

II. Sql Session Factory Builder creates Sql Session Factory through the Configurator object used to open SqlSession.

III. The user program calls the Mybatis api2 interface layer (that is, the MAPPER interface method) to parse the MAP Object Pectate object [28]. Transform creates a dynamic SQL node jdbc.Statement object. JDBC executes SQL. Based on the Mapped Statement mapping relationship, the results are converted into storage structures such as Hash Maps and Java Beans and returned to the network. The business feature of this project is using Mybatis to mine the database, using Mybatis to reverse complex operations from the database, creating real classes, thereby minimizing external exposure and improving security.

B. DEFINITION OF DATA MINING TECHNOLOGY RELATED CONCEPTS

Data mining refers to the process of searching for information hidden in a large amount of data through algorithms.

Data mining is usually related to computer science and achieves the above goals through many methods such as statistics, online analysis and processing, information retrieval, machine learning, expert models (relying on past rules of thumb), and pattern recognition.

With the continuous progression of artificial intelligence and database, data mining has become a hot topic in this research field, and it is more and more widely used in people's lives. Shen *et al.* (2019) compared the results of bilingual text mining according to companies, regions, service apps, and operating models when studying the status quo of online and offline (O2O) business progression. This work provided important insights from crowd intelligence and revealed the trend analysis of recent O2O progression in different language regions [29]. The so-called data mining refers to the discovery of previously unknown and potentially valuable things hidden in the massive data of the database and refers to the process of exposing the tiny. Data mining is a decision support process, mainly based on highly automated analysis of business data, inductive reasoning, and potential model extraction. It includes artificial intelligence, machine learning, pattern recognition, statistics, database, and visualization. Data mining can help decision makers adjust market strategies, reduce risks, and make better decisions.

People summarize the knowledge discovery process into three steps of data preparation, data mining, and data interpretation. Data mining is defined as the interaction between users or knowledge bases, which refers to analyzing each piece of

data and finding the law from a large amount of data. It mainly includes three stages of data preparation, legal research, and legal expression. Data preparation involves selecting the required data from related data sources and integrating it into a data set for data mining. Finding rules includes using specific methods to find the rules contained in the data set. The regular expression should be as user-friendly as possible. The way of understanding (for example, visualization) represents the rule found. Data mining operations include association analysis, cluster analysis, classification analysis, anomaly analysis, specific group analysis, and evolution analysis.

In recent years, the research of data mining in the information industry has become more and more common. The main reason is that there is massive widely available data, and there is an urgent need to transform these data into useful information and knowledge [30]. The information and knowledge obtained can be widely used in various adoption fields, including business management, production control, market analysis, engineering design, and scientific inquiry. Data mining uses ideas in the following areas, including sampling, estimating, testing hypotheses using statistics, artificial intelligence, pattern recognition, and machine learning algorithms research modeling techniques and learning theories. Data mining is also rapidly adopting ideas from other fields, including optimization, evolutionary computing, information theory, signal processing, visualization, and information retrieval. It also plays an important supporting role in other specific areas. Database models especially need to effectively support storage, indexing, and query processing. Techniques derived from high-performance (parallel) computing are often important for processing large data sets. Distributed technology can also help process large amounts of data, which is more important when the data can't be processed together.

C. DESIGN OF INFORMATION AGRICULTURE TRACKING SYSTEM BASED ON IoT

Based on IoT, the architecture of the information-based agricultural tracking model proposed in this research is shown in Figure 4.

In Figure 4, the IoT-based information agriculture tracking model mainly includes five areas, which are collection area, data area, persistent area, business area, and performance area. The entire model adopts a layered service architecture, in which the function of the collection area is collecting the original production information, and the data area is responsible for storing the collected data. Here, three high-efficiency databases are selected to improve the efficiency of data transmission and storage. The persistent area is responsible for simplifying the adoption of the database. The business area load contains five different functions of business. In the presentation area, model progression is carried out in two different forms of Web and client, which implement each module and function of the architecture to support the operation of the overall architecture.

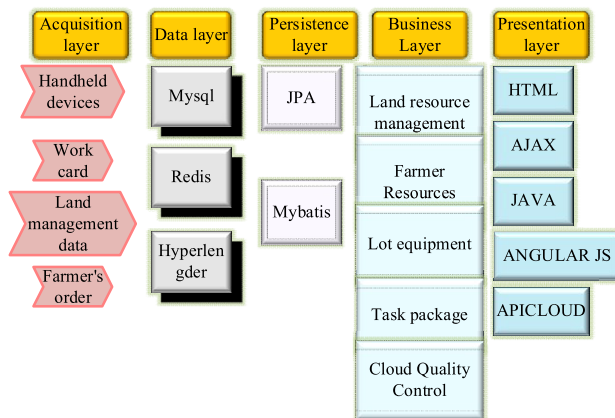


FIGURE 4. Architecture of information agriculture tracking model.

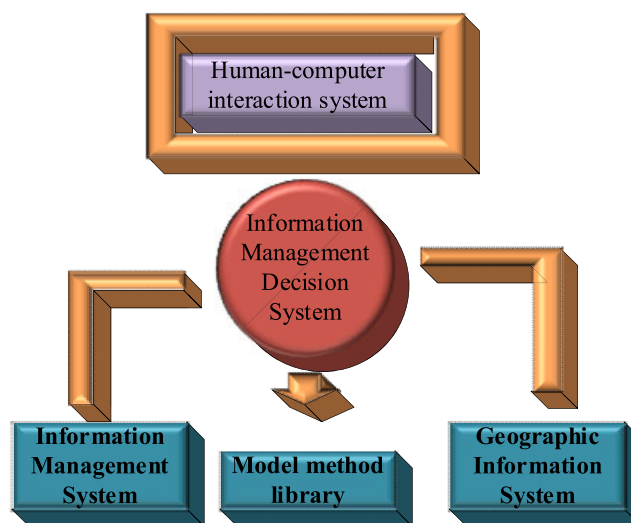


FIGURE 5. Agricultural information management decision model.

D. DESIGN OF AGRICULTURAL INFORMATION MANAGEMENT DECISION SYSTEM BASED ON DATA MINING

To further strengthen the management of agricultural informatization, an agricultural informatization management decision-making model is constructed based on data analysis and GIS. The architecture of the model is shown in Figure 5.

In Figure 5, the agricultural information management decision-making model under data mining is added with the GIS global positioning function on the basis of human-computer interaction. The main functions of the data mining function block include the following points. I. The production status can be predicted through the information data of agricultural production. II. It uses data analysis to judge the status of agricultural production and generate a comprehensive evaluation. III. Analysis of economic conditions is conducted to analyze the market economy of agricultural products, grasp the market conditions, and give corresponding suggestions. In addition to data mining, another function of this architecture is the GIS positioning function. Object Linking and Embedding (OLE) Automation

TABLE 1. Data information format.

Agricultural product name	Data attribute name	Type of data	Length
Production base number	PBNID	Varchar	20
Fresh agricultural product name	FAPN	Varchar	50
Quality mark	Quality	Varchar	2
Shelf life	Guarantee Period	Varchar	20
Production Date	Pro date	Varchar	20

is adopted to integrate GIS functions and integrate them into the entire model.

E. SYSTEM SIMULATION AND EXPERIMENT

In this study, two groups of experiments are designed. The first group of experiments is aimed at the IoT-based information agriculture tracking model, and the tracking performance of the whole model is tested from the production link, processing link, and commodity sales link. The research object is the flow information state of fresh agricultural products in cooperative merchants. The performance of the IoT-based information agriculture tracking model is tested and analyzed from the response time of query business, tracking accuracy, and network pressure.

The second group of experiments aims at the data mining model, using the analysis performance of the model to analyze the level of agricultural mechanization in a certain area of China, and the results are obtained. This study of the agricultural products supply chain data is from <http://product.cnagri.com/yjbg/index.html>. The supply time, type, and quantity of agricultural products of a province in 2017 are selected as data sources. The format of data information is shown in Table 1.

III. ANALYSIS AND DISCUSSION OF SYSTEM SIMULATION EXPERIMENT RESULTS

A. PERFORMANCE TEST RESULTS OF INFORMATION AGRICULTURE TRACKING SYSTEM

According to the query results of production links in the information-based agriculture tracking model, the information query diagram of agricultural products production links is drawn as shown in Figure 6.

According to Figure 6, the maximum number of events that can be processed simultaneously by the agricultural product tracking model in this study is about 800 per second when information query is conducted in the production link.

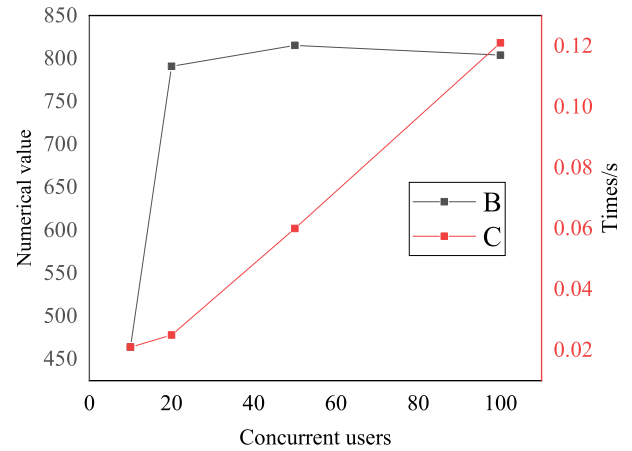


FIGURE 6. Information query results of agricultural product production links (B represents the trend of the number of transactions processed per second, and C represents the average response time.).

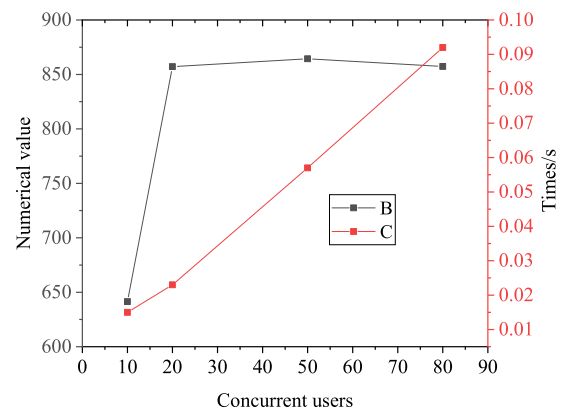


FIGURE 7. Information query result of the processing link (B represents the trend of the number of things processed per second, and C represents the average response time.).

In addition, the overall trend increased as the number of users sending messages at the same time increased. By comparing the response time curve, it is found that when the number of users reaches 20, the response time is 0.021 seconds. With the increase of the number of users sending information at the same time, the response time increases gradually. When 100 users sent messages are processed simultaneously, the response time is only about 0.12 seconds.

According to the query result of the production link of the information-based agricultural tracking model, the information query result diagram of the agricultural product processing link as shown in Figure 7 is drawn.

According to Figure 7, the number of things processed by the model per second increases with the increase of the number of users who send information at the same time in the process of agricultural product processing information query. The number of transactions per second peaks when the number of users sending messages at the same time reaches 50, and then declines slightly. When the number of users sending messages at the same time increases to 80, the average response time is only 0.092 seconds.

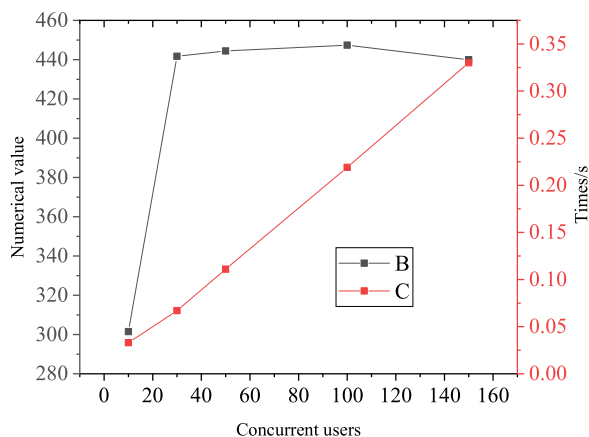


FIGURE 8. Information query result of the distribution link (B represents the trend of the number of transactions per second, and C represents the average response time.).

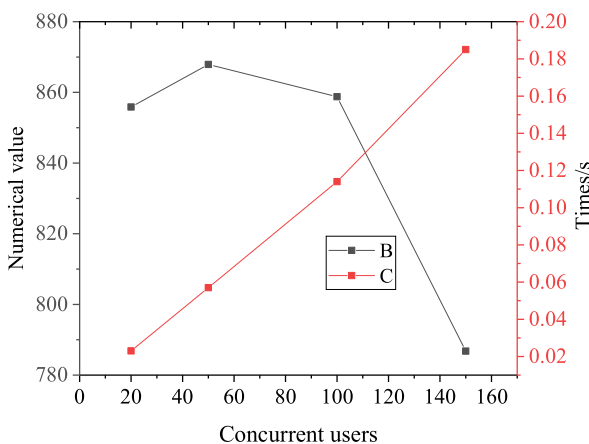


FIGURE 9. Information query result of agricultural product sales link (B represents the trend of the number of transactions per second, and C represents the average response time.).

According to the query result of the distribution link of the information-based agricultural tracking model, the result of the query result of the agricultural product distribution link as shown in Figure 8 is drawn.

Figure 8 shows that the query model has the fastest response speed for processing information when the number of concurrent users is less than 30 in the agricultural product distribution link. When the number of concurrent users reaches 30, the amount of information processed by the query model per second reaches a steady state, but it is still slowly increasing. When the number of concurrent users reaches 100, the amount of information processed per second reaches the maximum. At this time, the response time of the model is only 0.22 seconds.

According to the sales link query results of the information-based agricultural tracking model, a graph of the information query results of the agricultural product sales link as shown in Figure 9 is drawn.

In Figure 9, it is suggested from curve B that as the number of users sending information at the same time increases, the amounts of tasks that the model can handle at the same time

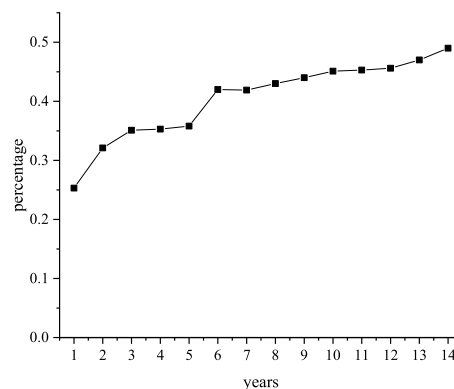


FIGURE 10. Analysis results of agricultural information mechanization level based on data mining.

gradually increases at the beginning. When the number of concurrent users reaches 45, the amounts of tasks that the model can handle at the same time reaches the maximum, and then begins to decline, but the overall value only changes between 780-860. In terms of response speed, even if the number of concurrent users is the largest, that is, when the number of users sent to the model at the same time is 160, the response time is only less than 0.2 seconds.

To sum up, the IoT-based information agriculture tracking model in this study can simultaneously process more than 800 events per second when querying information from the four links of production, processing, distribution, and sales. With the increase of the number of users sending messages at the same time, the response time is delayed but kept within 0.3s. It can well complete the information tracking of agricultural commodities, the performance is good, and the response speed is fast.

B. PERFORMANCE ANALYSIS RESULTS AND DISCUSSION OF AGRICULTURAL INFORMATION DECISION-MAKING SYSTEM BASED ON DATA MINING

Based on the analysis results of agricultural information mechanization level, the trend chart of mechanization level change in a certain region in China in the past 14 years is drawn in Figure 10.

Figure 10 shows the progression level of agricultural production mechanization in an agricultural area in the past fourteen years. From the fourteen-year progression course, it is obvious that in the initial stage, the progression level of agricultural mechanization in this area was very low, only 0.25%. Then, it grew rapidly in the next six years, and then fell into a bottleneck period. The growth rate began to slow down, but it is still growing. As of last year, it has grown to about 50%.

To further reflect the role of data mining, three indicators are set for the level of agricultural information mechanization according to the analysis results, and the mechanization indicator change comparison chart shown in Figure 11 is drawn.

In Figure 11, there are three indicators for agricultural information mechanization, namely, the degree of mechanization, comprehensive support capabilities, and

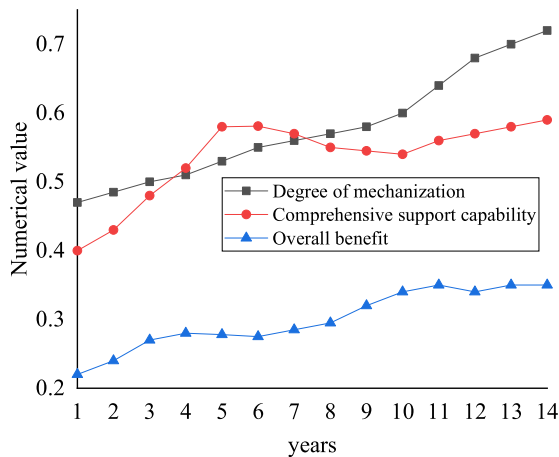


FIGURE 11. Comparison of mechanization index changes.

comprehensive benefits. In the past 14 years, the degree of agricultural mechanization in the region has been rising, and the comprehensive support capacity has risen rapidly in the first six years. Afterwards, there were twists and turns, and then gradually increased. The overall benefit progression trend is similar to that of the comprehensive guarantee. There was a gentle wave state, and it declined slightly in the 4th to 6th year. This is because agricultural mechanization developed rapidly and increased production levels in the early stages of progression thanks to government support and policy guarantees. After six years of progression, mechanization has basically been fully realized, so it has fallen into a bottleneck, coupled with the short-term market and price changes, which have an impact on the comprehensive benefits of agriculture. After that, with technological innovation and management mechanism improvement, it began to break through the bottleneck and regained progression.

According to the above analysis, the following suggestions can be put forward for the existing agricultural production reform.

First, it should rely on scientific and technological innovation to improve agricultural production efficiency. With the continuous progression of science, the progression of domestic agriculture has made great progress, but it will still be restricted by the bottleneck. Therefore, only by continuous innovation and breaking through the bottleneck can we continuously promote the progression and progress of China's agriculture.

Second, it is crucial to promote scientific and technological reform and, more importantly, continue to improve management mechanisms and services. China is rich in agricultural resources. However, due to the vast territory and numerous lands, management is difficult, so it is easy to be affected by the outside world. Leng *et al.* (2018) applied Radio Frequency Identification (RFID) technology in agricultural supply chain detection in research [31]. Agricultural product supply chain and agricultural product logistics information system were

introduced. At the same time, the application of RFID technology in agricultural supply chain detection in production, processing, and other links was described, and the information system of RFID technology in agricultural supply chain was designed. Then, the effectiveness of RFID technology in agricultural supply chain detection was verified. Therefore, this technology is the future trend of agricultural logistics development, which can promote the development of agricultural logistics supply chain detection. The research in this work not only introduces the Internet of Things and blockchain to track commodity information, but also analyzes the agricultural information decision-making system and puts forward suggestions for agricultural reform. By comparison, the research scope is broader and more comprehensive.

IV. CONCLUSION AND PROSPECT

This work takes the management of agricultural resources in China as the research background. Based on IoT and data mining, an information-based agricultural tracking model and an information-based agricultural management decision model are proposed from the perspective of production and management, respectively. Simulation experiments are designed to verify the performance of the model. The results show that, from the four links of production, processing, distribution, and sales, IoT-based information agriculture tracking model can complete the agricultural commodity information tracking, with good performance, and the response speed is fast. It can provide good service for customers and improve their consumption level and consumption safety. The results of data mining show that in order to promote the continuous progression of domestic agricultural level, it is necessary to carry out targeted exploration and reform from the two aspects of scientific and technological innovation and management optimization.

With the progression of technology, agricultural management and reform are no longer limited to a single category and field, but a combination of multiple fields. In this work, IoT and data mining are applied to agricultural resource information management to improve the level of agricultural progression. However, due to the objective limitations of the author's research level and external conditions, there are still the following deficiencies. First, this study proposes two models based on IoT and data mining that can play different roles in the field of agricultural management, but does not integrate the two. That's what should be analyzed in the next study. Secondly, the data mining is not deep enough and the processing accuracy is not enough. The processing of data is still lacking.

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