Research Article

Research on Enterprise Cooperation Management Strategy Analysis System Based on Knowledge Transfer Model

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The cooperative management strategy plays an important role in the development direction of enterprises. However, there are still many problems in the cooperation management strategy, the long-term development strategy is lacking in the management, which seriously hindered the development of enterprises. Knowledge transfer is an important research field and practice field of knowledge management, the qualitative analysis of knowledge transfer can be applied to the analysis of enterprise cooperation management strategy, which can solve the problems of enterprise management strategy analysis more effectively. In this paper, an enterprise cooperation management strategy analysis system based on the knowledge transfer model is built, in which the EAI algorithm is applied to the analysis of enterprise cooperation management strategy. Finally, the performance of the system is tested in many ways, the results show that the EAI algorithm can not only reduce the computational complexity but also can reduce the degradation phenomenon of the original evolutionary algorithm. The system can withstand the access of a large number of users at the same time, which can meet the needs of users.

1. Introduction

Only by successful strategic management can enterprises stand firm in the fierce market competition and remain invincible. As a part of enterprise strategic management, the enterprise cooperation management strategy plays an important role in the direction of enterprise development [1, 2]. At present, there are still many problems in cooperative management strategy, which are mainly divided into three parts, one is that the enterprise management system is not perfect, one is the lack of long-term development strategy, and the other is that the enterprise decision-making is not scientific [3, 4]. In recent years, human society has gradually entered the era of the knowledge economy, and the business environment of enterprises has also undergone fundamental changes, the knowledge and intellectual capital have become the main factors to measure the competitiveness of enterprises. With the advent of the knowledge economy, the role and significance of knowledge management is becoming more and more important. The interdisciplinary of technical information, management science, and data statistics promote the development of knowledge management theory and application. The qualitative analysis of knowledge transfer can be applied to the analysis of enterprise cooperation management strategy, which is a breakthrough in the concept of knowledge management and can more effectively solve the problem of enterprise management strategy analysis.

Knowledge transfer is not only an important research field of knowledge management but also an important practice field of knowledge management, and scholars have carried out a lot of research on knowledge transfer theory in recent years. Knowledge transfer is a process in which knowledge is transferred from one person to another, it mainly includes two stages, one is knowledge sharing, and the other is the absorption of knowledge [5]. The knowledge sharing is the prerequisite for knowledge transfer, there will be no knowledge transfer without knowledge sharing.
are various forms of knowledge sharing, the absorption of knowledge refers to the transformation of knowledge into understandable knowledge, which will improve the ability of people [6, 7]. Scholars put forward different knowledge transfer models, which are the spiral model of knowledge transfer, the process model of knowledge transfer, the element model of knowledge transfer, the path model of knowledge transfer, and the strategy model of knowledge transfer, and each knowledge transfer model has its application scope and characteristics [8]. In recent years, the research of knowledge transfer mainly focuses on three aspects, one is the research of knowledge transfer based on management theory, one is the research of knowledge flow and information sharing in knowledge transfer, and the other is the research of knowledge transfer based on the relationship between the organization and external [9]. Knowledge transfer based on computer science is also an important research hotspot, in which the knowledge transfer model based on information technology is applied to the analysis of enterprise cooperation management strategy. Knowledge transfer promotes the construction of information system and the spread of information technology, which has very important application value for the analysis of enterprise management strategy.

This paper is divided into three parts, which are the system framework, the system implementation, and the system testing. Firstly, the functional requirements analysis of the enterprise cooperation management strategy analysis system is analyzed, and the overall framework of the enterprise cooperation management strategy analysis system based on the knowledge transfer model is determined, which is based on the basic principles of management strategy analysis system design. Then, the management strategy analysis system is designed in detail from two aspects, one is the system overall flow, and the other is the system algorithm. Finally, the performance of the management strategy analysis system is tested.

2. The Overall Framework of the System

With the formation of the global market system, the optimization of internal resource management and business process has been paid more attention to, and enterprises pay more attention to the optimization and management of enterprise cooperation management strategy analysis system. From the perspective of knowledge transfer, this paper expounds on the necessity and feasibility of system planning, and the difficulties and key points of system construction based on knowledge transfer is analyzed, and the basic framework and implementation ideas of the system are constructed.

2.1. The Demand Analysis. In order to ensure the stability of enterprise cooperation management strategy, it is necessary to design a set of enterprise cooperation management strategy analysis system which meets the management requirements [10]. When the enterprise cooperation management strategy analysis system is designed, we should analyze the system requirements first. A complete system should have three functions, which are the stability, the expansibility, and the applicability.

Firstly, the system should be stable, which can greatly improve the efficiency of enterprises. With the development and growth of enterprises, enterprises urgently hope to use the integrated management system to strengthen the management of enterprises. Secondly, the system should have strong expansibility. With the continuous improvement of enterprise management requirements, the software and hardware of the management system need to be updated frequently. In order to avoid frequent replacement of the system hardware, it is required to leave some expansion interfaces in the design, which can add new functions and applications in the future. Finally, the system should have strong applicability. The computer technology is an important foundation for the development of the system, the application of the system should be more humanized and convenient with the development of the development technology, and the breadth and depth of the application should also be strengthened.

2.2. The Basic Principles. The main work of the enterprise cooperation management strategy analysis system based on knowledge transfer is to apply the knowledge transfer mode to the enterprise cooperation management strategy analysis. The system can provide a reference for the analysis of enterprise cooperation management strategy. Knowledge transfer is used to promote the construction of information system and the dissemination of information technology. In order to design a good cooperative management strategy analysis system, the following four requirements need to be met, as shown in Figure 1.

Firstly, the system should meet the system requirements of enterprises. For modern enterprises, the enterprise production is a systematic, large-scale, and cooperative production management mode, which needs a systematic management system. The systematic management system must cover the management of internal resources, external resources, and information of enterprises, so the management system of modern enterprises should be a large system. Secondly, the system should solve the problem of enterprise complexity. The specific management of enterprises involves a wide range of problems, and the demand difference is also large. Under the joint action of internal and external factors, the daily business management of enterprises becomes more complex. It is difficult to deal with these problems artificially, so the system should help managers to deal with the complexity problems under the given goals.

Then, the system should be able to coordinate the dynamic relationship of the enterprise. The enterprises will also face many needs, and the development of the system must meet the management, coordination, and communication of dynamic relations, which can realize the assistance to production, operation, and management. Finally, the system should have the ability of collecting information and mining knowledge. The information, data, and knowledge management are of great importance in modern enterprise
management, and the analysis of information data plays an important auxiliary role in the decision-making of enterprise cooperation management strategy.

2.3. The Overall Framework. The enterprise cooperation management strategy analysis system based on the knowledge transfer model mainly includes five parts [11], which include the data source, the data management, the data mart, the front-end tools, and the applications, as shown in Figure 2.

The data source is the foundation of the system, which is composed of several heterogeneous databases, and it is the data source of the whole system. The data source consists of two parts, one is the internal information that is mainly business operation data, and the other is the external information, which is mainly information resources such as the market economy macro environment. The data management is the core of the whole data warehouse system, which is mainly to extract, clean up and integrate data based on the existing system data. The data mart mainly recombines the data, which can facilitate multiangle and multilevel analysis, and the front-end tools mainly include the various data analysis tools, the query tools, and the data mining tools.

The management system can realize the real-time transmission and automatic update of information, which can realize data monitoring, information processing, and knowledge mining by using the extraction and loading of data. The early warning and decision-making model are established by the system method, in which the analysis effect of experts is introduced, and the multidimensional analysis of data is realized by using processing tools. The information is transformed into assistant decision-making information, which can meet the data analysis needs of managers. Through data mining methods such as association, sequence, and cluster analysis, inductive reasoning and judgment can be carried out on data, providing decision support for enterprise management.

3. Enterprise Cooperation Management Strategy Analysis System Based on Knowledge Transfer Model

In this paper, an enterprise cooperation management strategy analysis system based on a knowledge transfer model is built, in which the overall process of the management strategy analysis system is introduced. The immune
The evolutionary programming algorithm is applied to the enterprise cooperation management strategy analysis, and the fitness function of the algorithm is introduced.

3.1. The Overall System Flow. The overall process of the system is mainly divided into five parts, including the establishment of a data warehouse, the establishment of a data mart, the mining of multidimensional data sets, and the export of customer-oriented data and knowledge. Firstly, it is necessary to establish a data warehouse that is an important prerequisite and basis for data mining, in which the data and information in the database are entered into the data warehouse through DTS data conversion. According to the main business and mining objectives, the data marts are generated through a data warehouse, which is conducive to the analysis and mining of multidimensional data. Then, a multidimensional data set is established, and the managers and users can realize online processing and analysis of classification information in data mart through the web, which is based on the needs of data and knowledge. All kinds of data cubes are generated to meet the general needs of analysis, judgment, and decision-making, the system can realize the processing and processing of multidimensional data sets through the data mining engine, which can complete the discovery, extraction, storage, and update of knowledge. The last step is the export of data and knowledge, the results of multidimensional data analysis and data mining are imported into the Web Server by viewing the analysis results.

\[
D_k = (d_1, \ldots, d^N). \quad (1)
\]

where \(D_k\) represents the offspring group, \(d_i\) represents different individuals, and \(T_k\) is the annealing temperature control sequence that monotonically decreases to 0.

In the immune evolutionary programming, the parameters should be initialized firstly, the precision of constraint condition and solution should be determined according to the purpose and requirement of evolution. According to the principle of randomness, \(n\) individuals are randomly generated, whose component is a l-bit decimal. Then, the vaccine is extracted according to the prior knowledge, and the fitness of the current k-generation paternal population is calculated. If the current population contains the best individuals, the algorithm stops running and outputs the results. Otherwise, the current parent population continues to be mutated. The process of individual variation to produce new individuals is shown in formula (3), and the calculation of variance is shown in formula (4).

\[
b_j = a_j + \xi_j, \quad (3)
\]

\[
\delta_{ij} = \frac{T_k M_j + m_j}{T_k + f}, \quad (4)
\]

where \(b_j\) represents the generated new individual, \(a_j\) represents different individuals, \(\xi_j\) represents the maximum

![Figure 3: The running process of the algorithm.](image-url)
decimal number that does not exceed random variables, and \( M_j \) is a quantity related to the shape and size of the search space.

The running process of the EAI algorithm is shown in Figure 3, in which the termination condition of algorithm execution can be set as the maximum number of iterations or the maximum number of times that the best individual is not updated.

The vaccination is to extract a certain number of individuals in the current population according to a certain proportion, and some of these individuals are modified according to the previously extracted vaccine. A new generation of a father can be obtained by immune selection operation of the group, and the fitness of the individual vaccinated should be tested. If the fitness of the individual is not as good as before, the vaccination is cancelled, or the individual is retained to enter the next generation.

3.3. The Fitness Function of the Algorithm. In the immune evolutionary algorithm, the individual fitness function represents the ability of an individual to survive in the current environment. If an individual can continue to the next generation, it must have a higher fitness value than other competitors. The correct selection of fitness function is an important link to ensure the performance of the algorithm. In the process of algorithm implementation, the selection of fitness function should consider the correct description of knowledge, which include the completeness, the consistency, and the complexity. The definition of the individual fitness function is shown in formulas (5)–(9).

\[
f(R) = \left[1 + \frac{1}{2} wA\right] \times A + \left[1 - \frac{1}{2} wA\right] \times B + \beta C,
\]

\[
A = \frac{c}{c + nc},
\]

\[
B = \frac{c}{csize},
\]

\[
C = \frac{A}{4},
\]

\[
D = \frac{k}{T},
\]

where \( \beta \) represents a small constant, \( k \) represents the number of uncertain attributes in the rule, \( l \) represents the length of the rule, \( c \) represents the total weight of the correctly classified instance, \( nc \) represents the total weight of the wrongly divided instance, and \( csize \) represents the total weight of all instances in a concept set.

4. The Performance Test

The design of an enterprise cooperation management strategy analysis system is a very heavy work, its practicability needs to be tested in practice. In this paper, the immune evolutionary programming algorithm is applied to the enterprise cooperation management strategy, in order to verify the performance of the system when analyzing the enterprise cooperation management strategy, the algorithm and system performance are tested.

4.1. The Computational Complexity. In this paper, the EAI algorithm based on knowledge transfer is applied to the enterprise cooperative management strategy analysis system. Because the advantages of the algorithm directly affect the performance of the system, it is necessary to compare different algorithms first. The computing time of the conventional improved evolutionary algorithm and immune evolutionary programming algorithm is compared, the computing time of the system is tested, and the results of the commonly used improved evolutionary algorithm and
immune evolutionary programming algorithm are shown in Figure 4. It can be seen that the operation time of the conventional improved evolutionary algorithm is about 0.4735 seconds, while the operation time of the EAI algorithm is only 0.267 seconds, which is about half of the operation time of the conventional improved evolutionary algorithm. The conventional improved evolutionary algorithm has high computational complexity, and the computational time of the EAI algorithm is much less than the conventional improved evolutionary algorithm, which greatly reduces the computational complexity of the algorithm.

4.2. The Fitness of Offspring. The setting of the fitness function is an obvious feature that distinguishes the evolutionary algorithm from other search algorithms. Only under the guarantee of the fitness function, the algorithm can effectively simulate the evolutionary phenomenon of survival of the fittest in nature, so as to complete the preset optimization task. The correct selection of fitness function is an important link to ensure and improve the performance of the algorithm, so this paper compares the fitness of conventional improved evolutionary algorithm and immune evolutionary programming algorithm, and the results are shown in Figure 5.

As can be seen from Figure 5, the average adaptability value of the conventional improved evolutionary algorithm is 74.35%, and that of the EAI algorithm is 65.32%. Compared with the conventional improved evolutionary algorithm and EAI algorithm, there is little difference between them in solving results, but the latter is faster. This is mainly because the EAI algorithm can reduce the degradation phenomenon of the original evolutionary algorithm in the calculation process, which is conducive to the relative stability of the population, thus promoting the evolution process.

4.3. The System Throughput. The system throughput refers to the number of successful transaction requests and responses per unit time, which is also known as the pressure bearing capacity of the system. The greater the throughput of the system, the more users or system requests are completed by the system in unit time. The system throughput has three important parameters, one is the QPS which refers to the number of requests per second, one is the concurrency which refers to the number of requests processed by the system at the same time, and the other is the response time that is generally taken as the average response time. After understanding the meaning of these three elements, the relationship between them can be obtained, the QPS equals the quotient of a concurrent number and the average response time. The enterprise cooperation management strategy analysis system based on knowledge transfer faces more users, and the system may withstand lots of access at the same time. If the platform cannot meet the needs of users, it will lead to system collapse, which will seriously affect the user experience of the system. So the system throughput is tested and the results are shown in Figure 6.

The results show that in the enterprise cooperation management strategy analysis system, when the concurrent users make a large number of data requests at the same time, the CPU utilization rate of the system is 39.28%, and the average memory utilization rate of the whole concurrent access process is 480 M, which meets the design requirements. The enterprise cooperation management strategy analysis system based on knowledge transfer can be accessed by a large number of users at the same time, which brings users a better user experience.

5. Conclusion

Firstly, the functional requirements of the system are analyzed, and the overall framework of the management strategy analysis system based on the knowledge transfer model is determined. Then, the management strategy analysis system based on the knowledge transfer model is built, in which the EAI algorithm is applied to the analysis of management strategy, and the overall process of the management strategy analysis system is introduced. Finally, the performance of the system is tested, and the results show that the operation time of the EAI algorithm is far less than that of the traditional improved inheritance algorithm, which greatly reduces the computational complexity of the algorithm. The EAI algorithm can reduce the degradation of the original evolutionary algorithm in the calculation process, which can promote the evolution process. Moreover, the
system can withstand the access of a large number of users at the same time, which can greatly improve the efficiency of enterprise cooperation management strategy analysis. The system has the advantages of low cost and strong expansibility, which can be widely used and has good application prospect.

Data Availability

The data used to support the study are included in the paper.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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