



Automatic Correction Method of ERP Data Entry Errors Based on Big Data

Qinlan Wu^{1*}, Xijian Chao²

Jiangxi University of Engineering University Xinyu, Jiangxi, 338025, China

*Corresponding author's e-mail: 273123375@qq.com

Abstract

ERP (Enterprise Resource Planning) refers to the use of advanced management ideas and methods and standardized processes and data on the basis of information technology to integrate the resources owned by the enterprise, and finally achieve the purpose of optimal allocation of enterprise resources and business process optimization. ERP can improve the information level and resource allocation efficiency of enterprises. It is a management means that most modern enterprises will adopt. In order to further improve the accuracy and timeliness of enterprise resource management data entry, today's enterprises are considering introducing big data technology into ERP to realize the automatic correction of ERP data entry errors. Starting from the analysis of the current development status of ERP, this paper finds the shortcomings of the ERP system adopted in the enterprise, then puts forward the basic framework and specific application methods of using big data technology to transform the ERP system, and finally puts forward some suggestions on the operation and maintenance of the enterprise ERP system, hoping to improve the efficiency of enterprise resource management, Reduce the error rate of enterprise management data entry.

Keywords-big data; ERP; business management; promotion of information technology; Error correction

1. INTRODUCTION

The development of ERP is closely related to the development of modern science and technology. ERP was only the enterprise management concept put forward by Gartner consulting in 1990. With the rapid development of computer technology, the concept of ERP has gradually become a reality and is improving step by step with the development of society. ERP is not only a software in enterprise management, but also an enterprise management mode. Now many enterprises are constantly expanding their business and market. Many groups have branches in different regions. These branches are very many and widely distributed in different regions, which requires the group to have a management means to centrally manage and operate many branches, and ERP can unify business flow and voucher flow through system application. At present, most enterprises in the market are in a highly competitive environment. Based on big data technology, ERP system can complete enterprise information statistical analysis, investment management, after-sales service and maintenance, total quality management, transportation management, project management, automatic information correction and so on through preset procedures and computing ability for massive data.

Enterprises that make full use of ERP system can comply with the development of the times, promote information and digital transformation, pay attention to market dynamics at any time, reduce the possibility of errors in operation and management, and occupy an advantage in enterprise competition. In recent years, many enterprises have successfully completed the digital transformation, significantly improved production efficiency and achieved excellent operation through the application of big data [1].

2. DEVELOPMENT STATUS OF ERP

Different theories will appear under different era backgrounds and production relations. Before the Internet era, there are also different enterprise management concepts, which are suitable for the era of manual production and machine production. In the early 1960s, most enterprises in the world were produced by workers manually, with low cost, low efficiency and less output. The main requirement of enterprise management is to formulate a close production plan to complete orders and ensure that the time and quantity of goods are correct. At this time, the theoretical basis of enterprise management is inventory management theory and material demand planning. In the 1980s, enterprises

pursued competitive advantage, and there was a lack of connection between subsidiaries in group management. In this era, how to realize the unity of enterprise logistics, information flow and capital flow has become a problem for many enterprises, and system integration theory, logistics management and decision simulation also appear. In this era, the cost of computer is reduced, and many enterprises begin to use computers to manage enterprises on a large scale. The prototype of ERP appears at this time. In the 1990s, enterprises more pursue technological management innovation, hoping that enterprise management can timely use the changes of the market and make good use of all available resources. ERP was born. The enterprise management concept with computer as the core is more mature. The ERP system adds the functions of supply chain management, hybrid production, financial prediction and so on, which makes the application of computer technology in enterprise management more in-depth and extensive. In the 21st

century, ERP and big data are more closely linked. Extended ERP can meet the needs of enterprises to pursue information sharing and direct data exchange, make enterprises more closely and immediately, and form a survival chain for common development within enterprises [2]. With the continuous efforts of entrepreneurs and relevant scholars, ERP has developed from not being accepted by enterprises at first to being welcomed by many enterprises, which is strongly related to the addition of big data technology. ERP can be integrated with other different systems to jointly optimize the operation and management of enterprises, and has strong adaptability. Most enterprises will combine ERP and other technologies, and finally provide a specific relationship management system for enterprise management [3]. The integration of this management system with e-commerce and supply chain is the most prominent, as shown in Figure 1.

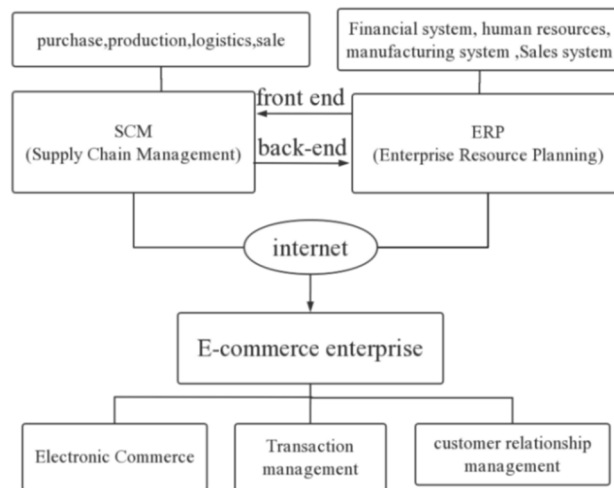


Figure 1. Enterprise relationship management system diagram

3. DEFICIENCIES OF CURRENT ERP SYSTEM IN ENTERPRISE MANAGEMENT AND CONTROL

3.1. ERP System Update and Maintenance

The technicians who design the ERP system do not fully understand the business and business process of the enterprise, so the ERP system design does not meet the specific management needs of the enterprise. The enterprise can not rely on the ERP system to realize the management of the enterprise, which is not conducive to the decision-making of the enterprise. The business operation of the enterprise is constantly improving. The ERP system also needs to be continuously improved with the growth of the enterprise. The corresponding structural system should also be dynamically adjusted, and the functions of the corresponding software products should also be adjusted in time according to the actual situation of the enterprise. Because ERP system can effectively

improve the work efficiency and management level of enterprises, at present, many large enterprises in China are using ERP system to sort out resources and understand the operation inside and outside the enterprise through ERP system. However, the ERP system of many enterprises can not well match the current development of enterprises, resulting in problems in the process and effectiveness of enterprise projects, and the advantages of ERP system are weakened under this situation. Therefore, enterprises should pay more attention to the renewal and maintenance of ERP system in order to give full play to the advantages of ERP system to the greatest extent.

3.2. The Data Accuracy of ERP System is Not Strong

The design and update of ERP system need the full cooperation of all departments to find and solve problems in time. Many enterprises will find inaccurate data when running ERP system. Most of these situations are caused by the error of data input by data entry personnel or the

lack of perfect cooperation between departments. In the process of product production and sales, many enterprises will adjust the production plan or sales plan, and the corresponding data are constantly changing, so the accuracy and timeliness of ERP system will decline. In addition, some enterprise employees do not fully understand and learn the standardized process of data entry, so in the process of data entry, they often fail to enter the data according to the regulations or frequently tamper with the data. This non-standard operation occurs for a long time, which will make the system user department feel the efficiency improvement brought by the ERP system. On the contrary, it will be found that the ERP system has frequent errors, the use feeling is far from as good as expected, the use efficiency is reduced, and the ERP system has not been widely used by enterprises. The accuracy of data in ERP system will be affected for various reasons, so ERP system needs to improve it by using big data technology on the basis of the actual situation of the enterprise, and improve the data accuracy by using the automatic error correction method.

3.3. The Business Process of ERP System does not Match the Actual Operation

There are conflicts between enterprise business processes and ERP system processes. In the early stage of ERP system operation, enterprise employees will be confused when entering data or using the system because they are not familiar with the system, which also makes the financial, warehouse, production workshop and other departments unable to connect perfectly with the actual work process when receiving data. And the ERP system of many enterprises is not designed independently by enterprises, but used after secondary development. Therefore, it is very common for enterprises to have business process mismatch in actual operation. Some enterprises have changed their business forms or business contents, but they have not adjusted the ERP system in time, which will also lead to the inconsistency between the business process and the ERP system process, and the disconnection of the overall operation of the enterprise.

4. INTELLIGENT ERP SYSTEM BASED ON BIG DATA

4.1. Overall Framework

In the process of data entry, enterprises are prone to data errors due to poor information, which will greatly affect the accuracy and timeliness of data. Therefore, it is necessary to make good use of operational management advanced big data technology to improve ERP system. The overall framework of intelligent ERP system based on big data is mainly composed of enterprise core layer functional units, enterprise functional units at all levels and public functional units, covering all aspects of enterprise operational management and providing help

for the overall of the enterprise. These three units exist independently, but they are interrelated [4].

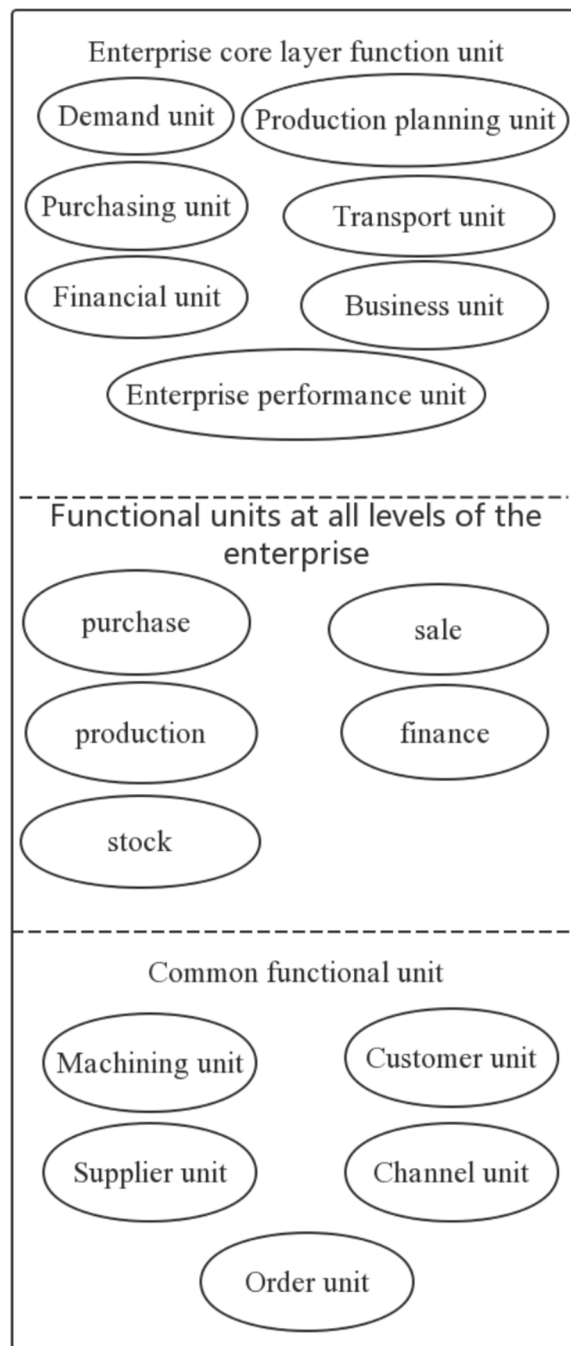


Figure 2. Overall framework of intelligent ERP system based on big data

4.2. Application Framework Based on Data Warehouse

When using big data technology for ERP, we should make good use of big data mining technology. Big data mining technology can ensure the security of ERP database and the operation efficiency of independent system in the process of data interaction. Building data warehouse in ERP environment can simplify the design

of data warehouse and reduce the difficulty of long-term maintenance. Most enterprises do not have a complete ERP environment. This problem can be solved through data warehouse. Data mining engine, knowledge base, data processing module, ERP business database and other applications can be integrated in data warehouse. Data warehouse can store and process huge data information, and use big data to transform and model valuable information, so as to provide clear and valuable data for enterprise decision-makers. And the database is independent of the ERP system. They do not interfere with each other and will not affect the other party due to the failure of one party. However, historical data is stored in the data warehouse, so the timeliness is poor.

4.3. Automatic Correction Method of ERP Data Entry Errors

ERP data is easily affected by many factors in the process of entry, so when using big data to improve ERP system, we should pay attention to the correction of ERP data entry errors. To solve this problem, the method

proposed in this paper is to build an ERP data entry errors automatic correction model, extract and analyze the characteristics of the entered data, and finally automatically correct the entered data. This method can achieve the purpose of rapid and accurate correction of ERP data entry errors and improve the ability of enterprise resource information management. The traditional correction of ERP data entry errors is to extract the statistical feature quantity and association rule feature quantity of ERP data entry, and use the fuzzy association rule detection method to capture and correct the error caused by data entry. However, due to the huge amount of data calculation, this method has the problems of low correction accuracy and poor real-time performance. The shortcomings of traditional methods can be improved by using big data technology. The ERP data automatic correction method based on big data first extracts the ERP data characteristics, samples the data by using fuzzy reasoning method and subspace training method, and then automatically corrects the entered data based on this basis [5]. The specific operation steps are shown in Figure 3.

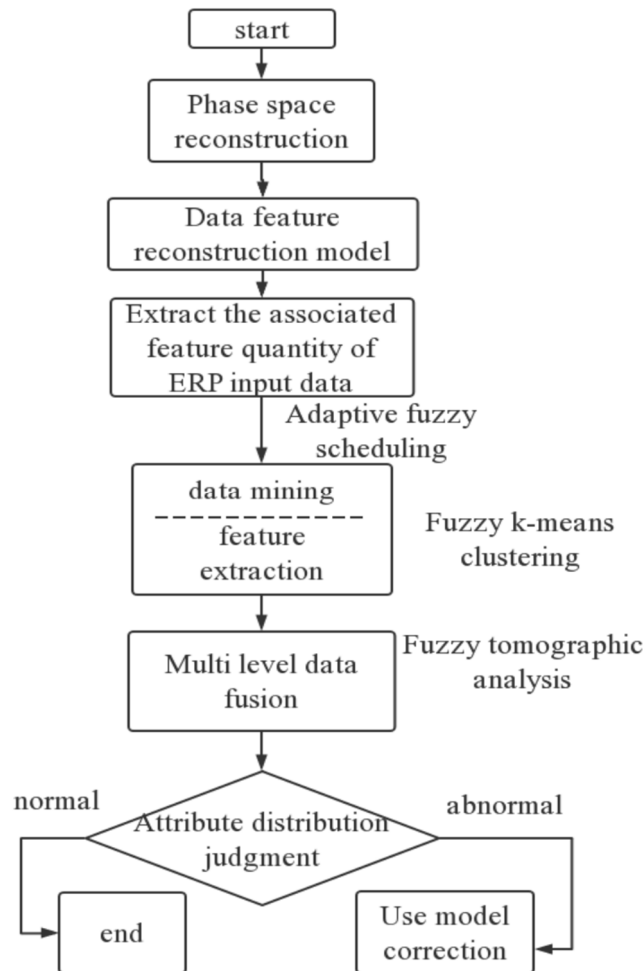


Figure 3. Specific operation steps of ERP data automatic correction method

5. MEASURES AND SUGGESTIONS FOR OPERATION AND MAINTENANCE OF ENTERPRISE ERP SYSTEM

When planning to build ERP system, enterprises should fully consider the timeliness, technicality and sociality of ERP project. ERP system is only an efficient enterprise management mode at present. It will be continuously improved and updated in the future. Moreover, the technical content required by ERP system is very high and requires the construction and maintenance of professional teams. Enterprises should be prepared for this and reserve the interface and space for future expansion and development. Only by making adequate preparations can we ensure the advanced nature of ERP projects in the industry, and ensure that information and data exchange and transmission are smooth in the external interaction, competition, internal communication, cooperation, etc. Enterprises should first refer to the standards and parameters implemented by the state, society and industry for the ERP system, and then refer to how advanced enterprises in the industry apply the ERP system. Based on this information, they can reduce the risk of implementing the ERP system and make the ERP run smoothly. Then the enterprise should fully consider the needs of different departments within the enterprise for the ERP system, let the staff put forward opinions on the ERP system, fit the actual needs of the enterprise, prevent the ERP system from becoming an air attic and avoid a large number of problems in practical application [6].

Many enterprises will form a professional team when they initially build the ERP system and implement certain incentive policies for the team to ensure that the ERP system can go online smoothly and operate effectively. However, after the ERP system has operated for a period of time, many enterprises will dissolve the professional team for cost considerations. However, various problems often occur during the operation of the ERP system, which requires timely maintenance by professionals. If you want the ERP system to run smoothly in the enterprise for a long time, you need fixed professionals to maintain and improve the ERP system.

6. CONSLUION

ERP serves the overall business development of enterprises, so ERP must be centrally and uniformly constructed and managed. Enterprises should make a unified plan for their business, form an overall solution for enterprise network operation, and build a unified information system platform, so as to eliminate the occurrence of low-level duplication and information island. Using today's advanced big data technology to mine massive data in ERP system and automatically correct the input error according to the data can provide strong technical support for the development of

enterprises and realize accurate decision-making. ERP still has a lot of room for development, such as cloud computing, blockchain, etc. science and technology are developing continuously. Enterprises should grasp the direction of the times and make good use of advanced technology to promote enterprise development.

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