

THE BUSINESS PROCESS REENGINEERING STUDY OF STEEL INDUSTRY BASED ON ERP

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Abstract: The steel industry is the one of the most important industry related with the national economy and the people's livelihood. Today, the informatization of the steel industry in China is still not advanced, which is not able to be compatible with the development of the steel production and the steel trade.

This paper analyzed the current situation of the informatization development of the steel industry in china firstly. Then it analyzed the current situation of information management of the steel company (hereinafter referred to as "S company") base on the theory of ERP and BPR, and gave the existent problems. Lastly, the paper presented the solution and the optimum proposal to the inventory module of the S company. The solution attained the objective of integration of production information system and the financial information system, optimized the business process and the management mode of the S company.

1 INTRODUCTION

The production and management process of the steel enterprise, which contains the supply of the materials, the production and sales of the steel product, the recovery and the recycle of the waste, is a supply chain integrated by business flow, information flow, capital flow, material flow. The steel enterprise, which is resource intensive, energy intensive, technology intensive and capital intensive, find it more and more difficult to extend development and profit space in the production area in nowadays. However, the information management is becoming a new way to get the competitive advantage.

Today, the informatization of the steel industry in China is developing quickly. However, it is still in its infancy compared with the foreign levels. Overall, the level of modernization and the efficiency of the informatization of the steel industry in china are relatively lower, which is not able to be compatible with the development of the steel production and the steel trade. Optimizing the information management mode is the urgent affairs to promote the competitive advantage in the steel industry in china.

2 THE FUNDAMENTAL PRINCIPLE OF ERP AND BPR

2.1 The Definition of the ERP

Enterprise resource planning (ERP) integrates internal and external management information across an entire organization, embracing finance, manufacturing, sales and service, etc. ERP, which is driven by the demand of the market and the client, optimizes the internal and the external resource configuration of the enterprise, eliminates all the useless resource. It aims to integrate the information flow, the material flow, capital flow and improve the satisfaction of the client. (Yuning and Wenyu, 2004)

2.2 The Management thoughts of the ERP

Zhou Yuqing considered that the essence of the ERP, which is reflected in 3 main aspects, is to manage the whole supply chain effectively. (Yuning et al., 2000)

1. To Manage the Whole Supply Chain Effectively

The modern enterprise can't get the competitive edge by its own resource only if the suppliers, producers, distribute network, clients etc are brought

into its own supply chain. The supply chains has become the key point of the competition between the modern enterprises. The ERP satisfy the demand of the market and manage the supply chain of the enterprise effectively.

2. Lean Production

LP (lean production) is to bring the clients, sales agents, suppliers, cooperation into the supply chain of the enterprise and share the profit with them.

3. Agile Manufacturing

Agile manufacturing means when there are changes in the market and the cooperators of the enterprise can't satisfy the demand of the development and the production of the new products, the enterprise immediately organize a temporary supply chain which is constituted by the specific suppliers, start the production and launch the new products into the market in the shortest time.

Overall, the management thoughts of the ERP are quite extensive and profound. The ERP system can transform many modern management thoughts into the software system that we can use in the work with the application of the modern information technology.

2.3 Business Process Reengineering

BPR (Business Process Reengineering) theory is the hot spot in the field of the enterprise and the management in nowadays. The BPR, which is proposed by Michael Hammer who is the famous master of enterprise management and the professor of MIT, popularized immediately in the field of the management of Europe and America.

In the 《The Essence of Business Re-engineering》, Joe Peppard, Philip Rowland considered that the BPR means the business process of the enterprise had to be rethought and rebuilt fundamentally by using the modern information technology and the management tools. It aims to optimize the cost, quality, efficiency and service etc and make the enterprise to adapt to the market environment that changing rapidly. It helps the enterprise automate and simplify the business process and the management. (Peppard and Rowland, 2003)

2.4 The Necessity of Integrating ERP and BPR

The application of the ERP demand the enterprise to introduce modern management software, what's more important is that the traditional business

processes have to be changed fundamentally. To optimize the whole process, the enterprise have to redesign each operation activity properly and reasonably, establish the new management organization that client oriented and response to the change of market quickly.

- a) The background of ERP needs the enterprise to reengineer the business process.

The ERP is an enterprise information management system to help the enterprises to adapt to the operational mode and the management requirement of market economy in western countries. In nowadays China is still in the stage of transforming from the traditional planned economy to the market economy. The management levels of Chinese enterprise are relatively low. The current situation of China demand the enterprises to reengineer the business process before the application of the ERP.

- b) The function of the ERP needs the enterprise to reengineer the business process

The realization of function of ERP demands the enterprise to rearrange the organization and the business process.

- c) The aim of application of the ERP needs the enterprise to reengineer the business process.

The aim of application of ERP is to improve the management and the economic benefit of enterprise. That requires the enterprise to optimize the business process with the application of ERP in order to make the whole operation more properly and reasonably.

- d) The continual improvement of enterprise management needs the enterprise to reengineer the business process.

The BPR require the business process of the enterprise has to be rethought and rebuilt fundamentally. Enterprises have to improve the satisfaction of client, reduce the cost of the operation, strengthens the core competence continually. Therefore, in the process of optimization the each operation activities also have to be eliminated, simplified, integrated and automated continually.

3 CASE STUDY

3.1 The Current Situation of Informatization in S Company

S company is a Subsidiary Company of a large-scale steel corporation in china. S company not only

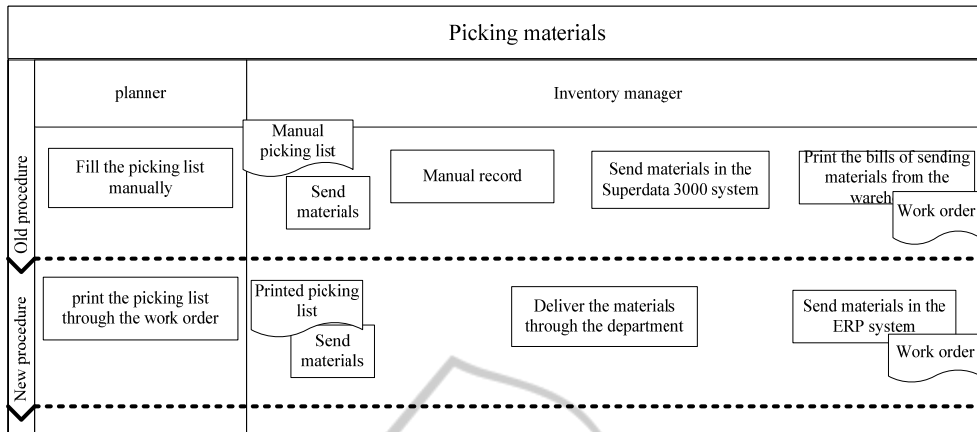


Figure 1: The BPR optimizations of picking materials.

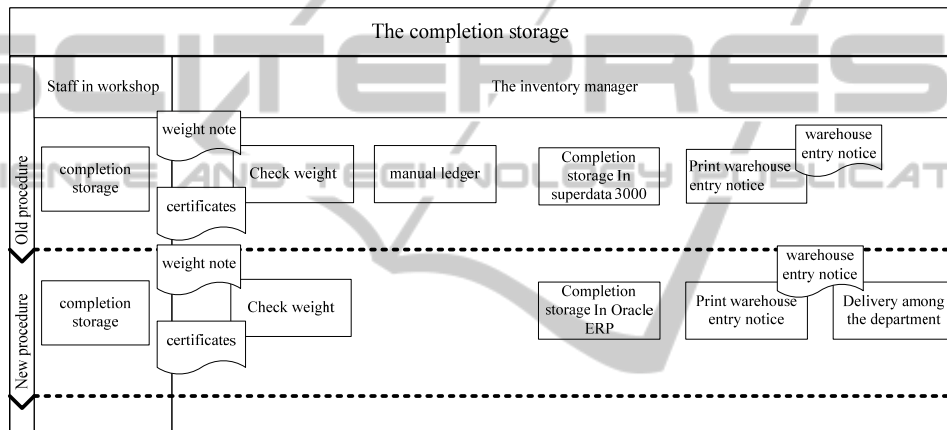


Figure 2: The BPR optimizations of the completion storage.

produces many kinds of steel products and also does quite a lot of researches and applications about steel wire rope and steel materials.

In the earlier stage, the financial module and the human resource module of the Oracle ERP has been implemented in S company. And the supply and sales department of S company uses the Superdata 3000 system to manage the purchasing, sales and the inventory.

The production system of Oracle ERP has not been implemented. The convergence between the production and the financial is realized by the manual documents.

In conclusion, each information system in S company is running separately. The financial information system and the business information system in S company have not been integrated.

3.2 The Problems of the Inventory Module in S Company

1. The basic data in S company is managed by each business department but not by a specific data department. The encoding rules of basic data made by each department are not identical so that the basic data can't be generally used.
2. The sales system, procurement system and the work in process system, which have no information system, are managed manually.
3. The financial information system and the business information system in S company have not been integrated.
4. The information of the purchasing, the sales and the inventory are managed by the Superdata 3000 system. The financial module of Oracle ERP is responsible for managing the financial information.
5. The link between the two systems relies on the printed receipts which can't make sure the

- accuracy and the instantaneity of the data.
6. There are no specifications about the disposing of the rejected products from the workshop and the client.

3.3 The BPR Solution of Inventory Module

The BPR optimizations have been done to the two procedures of inventory module: picking materials and the completion storage. The accuracy and the efficiency of the inventory management have been improved. What's more, the integration of the business module and the financial module has been realized.

3.3.1 The Procedure of Picking Materials

In the figure 1, the points have been improved in the procedure of picking materials:

- a) The quantity of the raw material can be reflected in the ERP system.
- b) The picking lists are generated by the ERP system so that the operation of sending materials relies on the work bills only and the efficiency and the accuracy can be improved greatly.
- c) It is more convenient to calculate the cost of the workshop when the sending materials and the missions in workshop are linked through the work bills.
- d) The financial entry can be generated instantly when picking the materials so that the inventory management is more accurate.

The improvement of the management:

- a) The efficiency of management in workshop is improved.
- b) The accuracy of the cost calculation of the product is more precise.
- c) The operation of picking materials and the financial module are highly integrated.

3.3.2 The Completion Storage

In the figure 2, the points have been improved in the procedure of completion storage:

- a) The reduction of manual ledger which is due to warehouse entry based on work orders increases the accuracy and effectiveness of operation.
- b) The financial entries are generated instantly through the delivery among the departments so that the business data and the financial data can be consistent.

The improvement of the management:

- a) Increase the management effectiveness of the end products.
- b) The accuracy of the cost calculation of the product is more precise.

4 CONCLUSIONS

The current situation of information management based on the theory of ERP and BPR of the S company has been analyzed and the existent problems have been indicated in this paper. Then the solution and the optimum proposal to the inventory module of the S company have been presented. The solution attained the objective of integration of production information system and the financial information system, optimized the business process and the management mode of the S company.

There are still many other points to be optimized. I hope the applications of BPR based on ERP can be more and more widespread.

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