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## Research of critical success factors of ERP implementation of WX company

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### ABSTRACT

Under the background of the transformation and upgrading of Chinese enterprises, transformation by informatization through the implementation of ERP is undoubtedly an effective means. And how to effectively increase the success rate of ERP implementation is an issue of common concern. By using method of case analysis and combining the ERP project of WX Company, this article analyses the critical success factors for ERP implementation and provides ERP implementation reference for labour-intensive manufacturing companies which are represented by WX Company.

### KEYWORDS

ERP implementation; Critical success factors; Strategic planning; Process integration; Project management.



## INTRODUCTION

The concept of critical success factors (CSF or Key Success Factor, KSF) was first proposed by US organization economist, John r. Commons (1934) and applied in the management of economy system and the progress of negotiation. Chester I. Barnard (1984), US scholar, applied them in management-decision-making theory. Slevin then applied the concept of CSF in researches of project management and pointed out that managers can put the limited resources on the most important places by identifying key success factors and that project implementation can be guided by monitoring of the key success factors. Since that the present success rate of ERP system implementation is not high, it is necessary to combine the current situation to analyse the critical success factors of ERP implementation.

### ANALYSIS OF THE RESEARCH STATUS AT HOME AND ABROAD

Currently the informationization of enterprises in developed countries has reached a very high level. Whether in terms of macro-economy and inner-enterprise, or parties on the great chain of enterprises, informationization has become a necessary means for enterprises to trump all. Pertinent literature of researches on CSF of ERP implementation at home and abroad are summarized as follows:

Huang (2004) used Delphi research method and thought that the 10 most significant risk factors in the process of ERP implementation are: lack of Senior Manager's commitment on projects, invalid communication with users, insufficiency of training on final users, lack of support from users, lack of effective methods for project management, attempt to establish complete integration with other and other remaining systems, serious conflicts between business sectors, unreasonable constitution of project team, failure in reconstruction of business processes, misunderstanding on changing needs<sup>[1]</sup>.

Nah F.F. et al have summarized the research results of many scholars, which are summed up as a CSF set of ERP implementation: project team and the organization, change of management planning and culture, support from senior managers, BPR and the minimum custom software, commercial plans and prospect, project management, project supporters, effective communication, performance monitoring and assessment, software development test and correction, properly using remaining business and system<sup>[2]</sup>. Ayyub Ansaringejad et al classified the critical success factors of ERP and drew a conclusion of the 14 major categories about the critical success factors of ERP implementation: business process, selection of vendor, project teams, project management, project scope, project implemental methodology, management layer, consultants, organizational structures, willingness to change, training, software development, budgeting, testing and transference to a new system.

Home scholars have made plenty of empirical researches on CSF, for example, Min Qingfei et al from Dalian Polytechnic University (2005) have summed up key success factors of ERP as: leadership, reconstruction of business processes, project management, change of management and external support<sup>[3]</sup>, and made empirical studies. Qiang Wei from Northeast University (2006) made empirical analysis on success factors for ERP implementation in Shougang Company, and summed up the 10 key success factors<sup>[4]</sup>. Lin Yong (2009) presented a control model on critical success factors of ERP implementation on basis of CMM and made a case study<sup>[5]</sup>.

### ANALYSIS OF KEY SUCCESS FACTORS OF ERP IN WX COMPANY

#### Project background

WX is a Chinese worldwide leading company, producing garment accessories, is China's first listed company of buttons and zippers industry, and is one of the China's main drafters of the standard of buttons and zippers. Because of the surge in business volume, traditional craft production cannot absorb so much businesses and development of the company was hindered, so the company commenced work on ERP project and use informationization to help break through the bottleneck of the development of the enterprise.

As a private labour-intensive manufacturing enterprise, its experience of implementing ERP can also be applied to the same type of enterprises, which is the purpose of writing this paper. Because even though each enterprise has its own characteristics, enterprises belonging to the same industry bear the generalities of the industry, so that we can seize these generalities to study and find ways to solve these common problems, and solutions to some common problems can be directly copied to improve the efficiency of problem solving.

#### Confirmation of critical success factors

Through the determination of key success factors, companies can pool resources to deal with key issues and also can increase the success rate of ERP implementation through management and control of critical success factors. 14 categories of key success factors of ERP implementation were mentioned in the documents recall above: business process/software custom, selection of ERP suppliers, project team, project management/commercial plans/business model, project scope, implementation methodology, management layer, consultants, organizational structure/communication, willingness to change, training, development of software, preparation of budget, test and transference to a new system. These key factors have been concluded from a lot of cases and are of a certain degree of representativeness. However these cases happened in a variety of industries and happened to both large enterprises and small or medium enterprises, so on the basis of different enterprise backgrounds, the critical success factors will differ. On the basis of WX ERP Project and interviews with Director

of WX Information Center and manager of Tide Project, this article summed up the the company's critical success factors as strategy and planning of ERP, integration of core business process, and management of implementation of standard projects.

### Strategy and planning of enterprise ERP

According to the goal, long-term strategic planning and actual situation of the enterprise, we propose a general planning, the description of the framework and design of blueprint of informationization, so as to help enterprises to get a general understanding of ERP project and to recognize their core competitive advantages as well as the role that ERP plays in the entire planning, and then to choose the most suitable technological strategies and implemental strategies for the company. By understanding the management status of WX and analysing its management processes, we have made a three-step plan of overall informational management system for WX according to the idea of "Stand on the present, look forward to the future" and on the principle of uniform of "logistics, information flow and capital flow" :

First step: The company should combine the theory of business management to adapt the current management processes and break through the bottleneck of "logistics" so as to improve corporate efficiency; should take advantage of the current ERP products to realize the integration of information of supply chain and production and management and data sharing, so that "information flow and logistics" will be synchronous; should lay the foundation for the future "Intelligent Enterprise".

Second step: On basis of ERP management system, the company should apply the current most critical RFID technology of Internet of Things to realize paperless management of material requisition and issuing in workshop and out-put and in-put of goods in warehouse so as to step into the early stage of "Intelligent Enterprise".

Third step: The company should applying RFID technology to each machine, each production process and each operating position so as to shorten the time of connections of various production steps, increase unit capacity, and avoid waste of resources. The company should popularize and apply the way of management of "Intelligent Enterprise".

### Core businesses and integration of processes

Through introduction of modern theories of management by implementing ERP system, enterprises can lead the deep innovation of management, such as changing corporate concepts, shifting operational mechanism and establishing modern management system. Enterprises should diagnose their management before implementing ERP to find out problems and bottlenecks in current management, so as to make clear the innovational needs of enterprise's development and management and have awareness of the changes of ways and means of management that ERP implementation will bring. Personally my opinion on integration of business processes is: Integration of business processes is intended to help enterprises through ERP implementation to establish a better optimized and more convenient business process based on its original features of process, rather than to integrate enterprises' original business processes before implementing ERP to meet the requirements of software. However it does not mean that diagnosis of management is no more necessary, enterprises should diagnose its management to find the defects of the current management, so that integration of business processes through informationization will be easier.

Taking WX's inventory management for example, because its type of make-to-order production determines that its procurement of raw materials should match with the order, however due to its manual production, it is unable to effectively manage each order, which results in its inability to accurately measure the purchasing quantity of raw materials and the necessity of a certain amount of stocking inventory. Through the implementation of ERP, problems of inventory management can be solved and enterprises can manage its inventory according to the model of project inventory, namely: goods are procured in unit of project orders, demand of procurement is determined by the project order, and purchased goods will be stored, released and pooled in unit of project order, as shown in Figure 1. Through the adjustment, not only can the occupied capital due to stocking inventory be reduced, but also can the costs of raw material be accurately assembled into each order, so that it is easy to control the cost of each order.

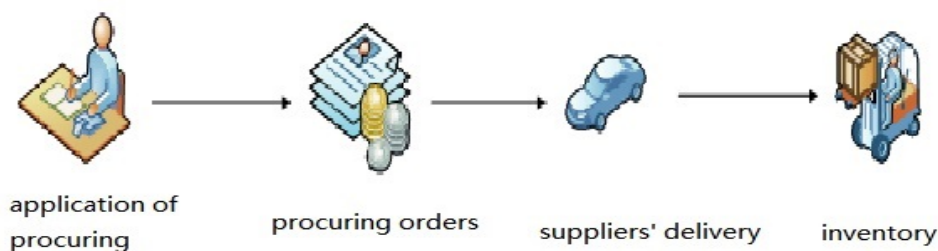


Figure 1 : Schematic diagram of project stock

### Management of the implementation of a standardized ERP project

Because ERP project is a system engineering for enterprise management which is of complex system, high difficulty in implementation and a long cycle of application, application of ERP must be based on systemic engineering and scientific

management and project management system and operational mechanism must be established and improved so as to ensure successful implementation of ERP projects. Although there are many factors of project management, some factors need to be focused on because of the uncertainty and the speciality of projects. Here are several factors that we think need to be focus on in this project: management of change, change management, progress management, communication management, and risk management.

### **Management of change**

With further implementation of the system, customers gradually get a deeper understanding of the system and will put forward some reasonable demands. Furthermore, projects will change due to changes of internal personnel and changes of technologies. This requires the project manager to analyze and understand the rationality and feasibility of these changes so as to take effective measures to cope with it.

### **Change the management**

Personally, changing the management is the biggest of the project, as most people are satisfied with the status quo, it was hard for them to give up their habit to adapt to the new things, especially harder when these new things will have a bearing on their interests, so changing the management decided whether the project will be successfully implemented or not. This requires us to infuse senior leadership of customer enterprise with the idea of innovation early in the beginning of the project, to win the support of senior leadership, and to dispel the doubts of customers so as to minimize the obstruction.

### **Progress management**

Each project has its time and deadline, so how to accomplish the project within given time and in absolute accordance with the given quality and quantity is the important issue to be focused on in progress management. Personally problems that are most likely to occur in progress management are underestimation due to information asymmetry, which will result in a overdue project. This requires us to fully assess the feasibility of the project, to taking into account all kinds of incidents as much as possible, to make pre-arranged plans so as to make the project successfully completed in expected time.

### **Communication management**

ERP implementation is a kind of interactive implementation which needs efforts of both implementation teams and customers, and communication is the most critical in such interaction. Through communication, we can know about the customers' exact requirements and are able to consider the feasibility of our own needs first when customers put forward their needs. Through communication, cases of shifting responsibilities to each other can be effectively prevented, which ensures the project to run smoothly, so communication is the lubricant of project implementation.

### **Risk management**

Risk is the uncertainty in the process of the project and is likely to cause a destructive damage to the project. Thus we have to take precautions to prepare appropriate countermeasures against risks in advance. According to previous summaries, main risk factors of ERP implementation are: support of leadership for the project, personnel changes, developing quality of software product, data preparation. So we should make early preparations for the above four factors to minimize the bad impact.

## **REFERENCES FOR LABOR-INTENSIVE ENTERPRISES**

WX is a private labor-intensive manufacturing enterprise, so this article aims to analyze the critical success factors for WX's ERP implementation and to provide references to implementing ERP for private labor-intensive manufacturing enterprises in the future. In labor-intensive enterprises, labor consumption accounts for a large proportion of product cost and organic composition of capital is low. Features of this type of enterprise are: less investment, fast turnover, low level of technology, large proportion of manual labor, and large demand of labor. We can sum up problems of this type enterprise from the features: irregularities of management, frequent mobility of personnel, lack of construction of enterprise culture and the non-standardization of basic data. So when enterprises of this type are implementing ERP, besides the three critical success factors in WX ERP project (strategy and planning of ERP project, integration of core business processes and standardized management of ERP project implementation), they should remember to and optimize the management system, to construct a good enterprise culture, to establish a sound human resources system and to constantly standardize the basic data.

### **Perfect management system and good corporate culture**

Perfect management system and good corporate culture was the prerequisites for Informationization of enterprises, however most labor-intensive enterprises develop from individual private ones, scarcely having corporate cultures or perfect management systems, so these enterprises should enhance soft powers of this aspect. As the saying goes, "development of enterprise its management, depends on its culture". There is a saying called "third-class enterprise depends on the talent, second-class enterprise depends on the management, first-class enterprise depends on the culture." Corporate management and corporate culture are the two indispensable prerequisites in the growth of enterprises.

### Perfect human resources system

Perfect human resources system. High personnel mobility of labor-intensive enterprises is a major obstacle to ERP implementation, as it takes some training for the operation of ERP system, however high mobility make the training results in vain, and employees' participation is not high, which cause that enterprises seldom organize trainings. Thus enterprises should establish a perfect human resource system to retain personnel to reduce mobility of personnel. Researches at home and abroad mentioned above may not include human resource management into critical success factors of ERP implementation, but for labor-intensive enterprises, sound human resources management should be included into the critical success factors of ERP implementation. We all know that staff training is an indispensable link in ERP implementation process, including the training of key users and final users, but if these first-tier operators often changed, the training effect will be greatly reduced and training costs will also rise. So in order to solve the problem, first step is to establish a perfect human resources system, to analyze causes of brain drain and to find ways to retain personnel. Otherwise constant change of personnel will cause hidden dangers to the stability of system operation.

### Standardized basic data

We know that ERP system is a management information system aiming to take overall management of logistics, capital flow and information flow, and the smooth flow of these three kinds of resources in the system is based on standardized data. The aim of standardization of basic data is to improve the system's readability of data, and good readability will not only improve the efficiency of data processing, but also can improve the accuracy of data processing, so as to accomplish work quickly and well. Standardized basic data is the reflection of the enterprise's good management and is the prerequisites for implementation of ERP. Whether the basic data is sound or not will have a bearing on the accuracy of the final result of the ERP system. However labor-intensive enterprises seldom standardize data well, so errors will easily occur when data is being inputted. Many enterprises may not be able to obtain these data because of its long period of extensive management. Then there are two solutions: one is to shut down the system's business modules that are associated with the missing data, the other is to customize ERP system on the basis of the data available. Taking cost into consideration, ERP vendors are more willing to choose the former solution, which will eventually led to the low actual coverage rate and low running rate of ERP systems and that ERP's expected effect of will not be achieved. So the standardized basic data is one of the important factors for the smooth progress of the project, which can reduce the unnecessary secondary development and the cost of implementation, and also can improve operational efficiency, shorten the project cycles and reduce customers' costs. The most important thing is that risks of implementation can be avoided by standardizing basic data.

## CONCLUSIONS

Chinese and Western scholars have done a lot of research on for ERP implementation, which embodies people's attention on it well enough. Critical success factors are mainly revolved around the 11 factors of the CSF Set of ERP implementation summarized by scholar Nah F.F. et al. On the basis of previous research, this article combines WX's ERP project and summarizes three critical factors, namely: strategies and planning of enterprise ERP, core businesses, integration of processes and standardization of the management of ERP project implementation. Combined with WX's ERP project, this article analyzes the references to labour-intensive manufacturing enterprises. Through the analysis of critical success factors of WX's ERP project, this article suggests that the critical success factors for ERP implementation are summaries and conclusions of experiences, theoretically are of general applicability and can narrowed the scope of factors when related implementation personnel search main problem, but during practical operation, critical factors for ERP implementation of different enterprises differ from each other and can not be applied mechanically. That is to say, researches on critical success factors are just intended to offer references to implementing ERP rather than a standardized solution. But after all, my knowledge and experience is limited, and views presented will inevitably be flawed, so I will enrich my knowledge and experiences in my future work and studies and I hope this article can provide help for the implementation of ERP for enterprises.

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## REFERENCES

- [1] Qun Cao; Research on the Critical Success Factors in ERP of DF Group[D]. Master thesis: Lanzhou University, (2010).
- [2] F.F.Nah, K.M.Zuckweiler, J.L.S.Lau; ERP Implementation: Chief Information Officers' Perceptions of Critical Success Factors [J], *International Journal of Human-Computer-Interaction*, **16(1)**, 5-22 (2003).
- [3] Benbo Li, Sheng Chen, Haitao Qiang; Empirical Study on Factors Affecting ERP Implementation Performance of Chinese Enterprises [J]. *Modern Finance and Economics*, **6(25)**, 4-38 (2005).
- [4] Wei Qiang, Xiaoyuan Huang; ERP Construction and Practice of Large Manufacturing Enterprise: A Case Study of Shougang [J]. *Management world*, **5(11)**, 164-165 (2005).
- [5] Yong Lin; Study on Critical Success Factors of ERP Implementation Based on CMM Process [D]. Master thesis: Jinan University, (2009).