

Strategy and Risk Analysis of the ERP Projects in Three Chinese Cigarette Enterprises

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ABSTRACT

During the past decade, Chinese enterprises have achieved great improvement in terms of competition ability. Information techniques are playing even more important role in this period. In order to conclude principles of IT transformation processes of Chinese companies, three typical Chinese cigarettes companies have been investigated in this paper. After introducing the IT evolutions in each firm, we compared the main parameters of their ERP or similar IT projects with another foreign company. Based on the comparison, two problems are discussed further. Firstly, we use strategic grid analysis method to find what is the IT strategy of each firm and why they adopt such a strategy. The new possible IT transformation ways are discussed also. Secondly, risk management problems are another focus of this paper. Three main risk factors are integrated to judge the risk type of each ERP projects, and different risk management strategies are discussed also.

Keywords: ERP, e-business, risk analyses, strategic grid

1. INTRODUCTION

IT as a new kind of communication and innovation tools, it has had impacted enterprises management processes greatly. A lot of new management concepts, such as ERP (enterprise resource planning), CRM (customer relation management), SEM (strategy enterprise management), have been put forward to improve the core competition ability of enterprises. Especially for the globalizing enterprises, they can not survive without modern IT-based management methods. During the past decade, the pioneers have invested a lot in combining IT with traditional management methods.

Chinese enterprises are playing a more important role than ever in the global economic system now. As the most potential market, it is very important to analyze the IT-based business models of Chinese enterprises. These kind of research works will help Chinese companies to understand how to rapidly adapt the IT transformation process. At the same time, it will be also useful for the foreign enterprises to know the mutually impact between oriental culture and information technology.

The purpose of this paper is to survey several Chinese cigarettes companies, compare the different IT transformation ways of each company, and discuss their e-business strategies and risk management methods during the IT absorption processes.

By summarizing the different IT evolution of these enterprises, and concluding why they adopt current IT strategies and how they established these strategies, the effect of their IT strategies, especially the impact on the profit, human resources, and productivity is concluded.

Based on the conclusion, we use strategic grid method to further discuss IT strategies of each company, and put forward new IT transformation ways correspondingly. In terms of risk management of ERP projects, we list three important factors that affect risk management strategies, and analyze the risk of each company theoretically.

2. IT EVOLUTION IN EACH FIRM

2.1 SAP R/3 in Yuxi Hongta Tobacco (Group) Co., Ltd.

In order to improve the group's competition ability, Yuxi Hongta has explored the IT-based manufacturing and management systems for nearly ten years. In 1993, the group began to invest on the automatic manufacture systems as well as some management systems year by year, by the end of 1998, more than 300 computers were running for line-control as well as management. In addition, the group also set up 10 ALPHA series mini-mainframe computers, 4 PC servers, 27 SGI Graphic workstations. In 1995, the FDDI project had been finished, and the local computer network was established in 1996 which had been upgraded to ATM in 2000. There were 48 application software systems in different sections of the group before 2001.

In 1998, the group started to contact ERP concepts, and compared different implementation strategies of ERP, such as applying advanced ERP software package, applying the manufacture-based medium ERP system, developing the ERP system by themselves. After serious consideration, they decided to adopt the first scheme,

and in 2000, the contract had been signed with SAP AG (China), and the ERP project began on Jan. 12, 2001, finished on Feb. 12, 2002.

On Feb. 12, 2002, the ERP system of Yuxi was online successfully. The improvement is dramatic, just as Mr. Zeng, the CIO of the group, mentioned, the enterprise change its operation way from the deep inside, the mainly improvements include:

- 1) Change of enterprise strategy. Close-loop business processes had been set up. So the leader group can get information about manufacture and market immediately and make decision more accurately. In addition, the enterprise has formed an IT-based strategy, which is mainly about how to convert data into knowledge of the enterprise.
- 2) Logistics had been optimized. Mr. Zhang, the chief manager of Hongta material company, said, ".....in the ERP system, Inventory management and finance management are integrated, once materials were shifted, the system will update the account automatically. At the same time, system can generate online inventory reports; it is very convenient for query. Because of the implementation of ERP system, the inventory cost had been reduced 0.2~0.5 billion Yuan (approximately 25~50 million USD). The system also enabled the total cost control, it is estimated that the production cost will reduce 50~200 million Yuan (approximately 6~25 million USD).....".
- At the same time, the loading efficiency had been improved also, loading ability had been changed from 8,000 cases per day to 11,000 cases per day.
- 3) Change of supply chain management. In the ERP system, information among the whole supply chain (suppliers, purchasers, manufacturers, wholesalers and retailers) was integrated, managers can learn the whole status of the supply chain, and make decision and coordination accurately and immediately. Especially for the suppliers management system, because of the RFQ (Require for Quote) and PO management system, managers can compare different suppliers, and greatly reduced the purchase cost.
- 4) Change of finance management. The budget was made and evaluated according to the standard cost system in ERP system. So, any finance problems can be found by querying the accounting system, and the reason and responsibility of these problems can be addressed easily also. The new characteristic of the finance system is integration; module FI (Finance) and CO (Control) are fully integrated with MM (Material Management), SD (Sales and Distribution) and PP (Product Planning), which make the whole system is consistent and efficient, and provide the manager accurate decision information.

2.2 Oracle Applications in Baisha Group

IT utilization in Baisha group can retrospect to the year of 1992; the former CEO realized that information technology will enforce the manufacturing ability, so they decided to invest on IT infrastructure. By the year of 2000, 60 million Yuan (approximately 7.5 million USD) had been spent on IT projects, the basic IT infrastructure had been established and a lot of application software systems were running in different departments.

Although the group had spent so much money, the CEO recognized that their IT expenditure was not successful until 2000. Especially for the manufacturing system, the group spent more than 2 years to implement MRPII (manufacturing resource planning), but the results were not satisfied. By that time, the leader group of Baisha analyzed experiences of their IT expenditure, and some defects were found out.

According to the analysis above, the group decided to implement totally IT-based management reform project. They called it BPR & ERP project. It was quite hard project, because the reform process will change the balance of the company, in case of the project was failure, the company may be disorder.

After carefully comparing different ERP software vendors, the group decided to adopt Oracle Applications 11i. The flexibility of Oracle Applications permits the group to design new business processes easily and quickly. And the implementing cost was relatively low also.

The typical characteristic of the implementation is that the group made great effort to do BPR Project first, and then implemented ERP software system. On Jun. 25, 2001, the BPR project had been completed; on Nov. 5, 2001 ERP system was launched.

Talking about the improvements, Miss LU Ping, the CEO of the group, said "..... the remarkable improvement is that we has rebuilt our Baisha culture, and the business processes have been optimized also, so the Baisha group become stronger and agile.....". To summarize, the achievement in detail includes:

- 1) Formed new enterprise culture. All employees have had a clear and same goal, and put great enthusiasm in their work now. They have learned the new position of themselves in the new business process, and were encouraged by the perspective of the enterprise. The new company culture, "long-lived brand, long-lived enterprise and long-lived Baisha people", has been carried into each job position.
- 2) Optimized business processes. During the 51 core business processes, the non-value-added processes had been eliminated, the value-added parts had been

reinforced. And the manufacturing recycling time had been shortened simultaneously.

3) Organization reform. According to the new strategy and the principle of lean and intensive of the new enterprise, the group re-designed their organization architecture, set up a new structure based on the new business process.

4) Improved manufacture and management efficiency. The ERP system had been successfully implemented, and the optimized business processes were solidified in the system. So the company is run more efficiently than before, and the reward was remarkable. Such as, accuracy of financial plan had been improved 15%; accessory material inventory cost had been reduced from 100 million Yuan to 50 million Yuan; delivery cycle (from moving out inventory to loading) had been shortened from 12 hours to 10 minutes.

2.3 Develop ERP by themselves: Honghe Group

Before the year of 1997, although Honghe Group never considered IT-based business strategy, their automatic manufacturing system had been an important infrastructure of the company. Leading by Mr Qiu, the CEO of the group, the company has established some special but efficient business processes.

When they began to consider the IT strategy in 1997, after comparing a lot of ERP software packages, they found that it was quite difficult to choose one kind of software which can be compatible with the automatic manufacturing system as well as the existing effective business processes. It seemed that the best way is to develop the integration system by themselves.

To make such a decision was quite hard, because the company had not enough information technical teams. But fortunately, during the past 5 years, the great partner—Kunmin Ship Company—had built a strong IT team which can accomplish the software development tasks.

The core of the project is how to design business processes. From 1998, Mr. Qiu, served as both CEO and CIO, lead the project himself, and attended to design each business process. It took 3 years to accomplish this work, during the 3 years, Mr. Qiu never left Yunnan province, he put all his efforts on the redesign of the processes. It is very rare that the CEO will design the processes by himself during an IT project, but Mr. Qiu made it.

Talking about the scheme of the IT project, Mr. Qiu is always exciting, “.....the project is a system, it must embody the characteristics of how to operate cigarettes manufacturing systems, so it is the operating software of the enterprise. The scheme must be efficient and optimized, the organization structure, business processes

and the operating rules must be totally designed in the scheme. And at the same time, the company should rebuild it's IT-based cultures as well.....”

The business processes scheme includes 8 modules, that is: office support, finance, manufacture, sales and distribution, raw materials management, auxiliary material management, equipment management and R&D. All of these modules can be fractionized into more than 11,000 sub-modules.

During the three years design process, the company reformed their organization structure accordingly as long as opportunity was proper. Before the HY-CIMS project began in June 2002, they have established firm fundamental of both organization and knowledge.

In June 2002, the company shifted their scheme to Kunming Ship Company (KS), and the KS finished the blueprint of HY-CIMS technically on Jun.18, 2002. From Jun. 2002 to Aug. 2002, KS accomplished the detail design of each module. Finance module had been developed at the same time, and the first training about new finance system was carried out simultaneously.

By the end of Oct. 2002, modules had been online continually, material management, manufacturing, office support, personnel management and equipment management modules were developed as well as trained. In Jan. 2003, the whole system had been integrated and tested; HY-CIMS had been accomplished.

The HY-CIMS project brought great effect on the company, although the investment is no more than 10 million Yuan (approximately 1.2 million USD). The direct benefits are the costs have been reduced and the efficiency improved. According to the preliminary estimation, HY-CIMS has improved the yield of the company by 3%, this means the company can get another approximately 75 million Yuan (9 million USD) each year.

3. STRATEGIC COMPARISON OF IT EVOLUTIONS

In table 1, we conclude the basic IT transformation process of each company.

It has been suggested that to fully realize the competitive advantages created by the strategic use of IT, organizations must have appropriate IT management strategies that fit with their culture, technology status, and business strategy.

This contingent nature of IT management has drawn much attention in the IT literature^[1, 2, 3]. Given the importance of a proper alignment of IT management processes with the organizational role of IT, organizations need to have a clear and systematic understanding of the strategic relevance and impact of

their IT, and then develop IT management strategies appropriate to that role.

A framework for delineating the differences in the strategic relevance and impact of IT was proposed by Applegate, McFarlan and McKenney^[1]. This framework

identifies four different IT roles which are referred to as categories of strategic relevance and impact or, simply, as the strategic grid. The grid is a useful framework for understanding the positioning of an organization's IT, and as the basis for designing appropriate planning and control systems for IT management.

Table 1 Comparison of IT Transformation Process

		Hongta	Changsha	Honghe	Dow Corning ^[4]
Basic Information	Yield (2002)	220	90	90	
	Income (Billion USD)	4	0.9	0.9	2.5 ¹
	Employee	4500	2600	1800	9000 ¹
	5 year Income Aver. Increase	15%	20%	20%	~4%
Strategic role for IT	Begin Date	1993	1992	1996	1996
	Focus	Business Change	Business Change	Business Change	Business Change
	Strategy Leader	VP	President	President	President
ERP	Combine with BPR?	Half	Yes	Yes but passive	Yes
	Project Initiated	2001.2	2001.1	1999.1	1996
	Completed	2002.1	2001.11	2003.1	1999
	Period(month)	11	10	48	36
ERP	Expenditure (million USD)	10	2	3	<100
	Project Manager	IT manager	President	President	VP/CIO
	Consultant	RenTong Cons.	HAN Consulting	None	None
	Software Vendor	SAP mySAP.com	Oracle	Developed	SAP R/3
Project Benefits	Hierarchy Reform	Done in 2003.4	Same time	Little	Yes
	Reputation	Improve a lot	Medium	Medium	Improve
	Enterprise Culture	Improve	Rebuilt	Little Impact	Coming Impact
	Profit Increase (EST)	5%	3%	5%	N/A
	Inventory	-20%	-50%	-30%	
	Employee	-20%	-30%	-	
Others	IT % Income	~0.5	~0.1	~0.2	~4.5
	IT Reporting Influence	Low	High	Medium	High

Note 1: Data in 1998

* Yield unit: million cases

Applegate, L. M., McFarlan, F. W., and McKenney, J. L.,^[1] describe two (future and current) aspects of strategic relevance and impact of IT and are referred to as the future and current portfolios, respectively. The strategic relevance and impact of IT for a firm can be positioned anywhere on a continuum ranging from low impact and relevance to high impact and relevance along each of these dimensions of the grid. Applegate, L. M., McFarlan, F. W., and McKenney, J. L., propose that understanding an organization's position along these continuums is critical to developing appropriate IT management strategies. The combination of future/current portfolio with high/low impact presents four types of IT environments and is represented by the four cells (strategic, turnaround, factory and support

cells) of the strategic grid.

Strategic (Cell 1): Organizations in this cell are critically dependent on the smooth functioning of the IT activity. This dependence relates to existing systems as well as to applications under development, i.e. to both the current and future portfolios.

Turnaround (Cell 2): While existing applications may provide operational support for organizations in this cell, they may not be critical to the organization's current operations. However, the impact of the applications under development is considered vital to achieving the organization's strategic objectives.

Factory (Cell 3): These firms are heavily dependent on

their existing, day-to-day IT operations and even a temporary disruption in service could have severe operational consequences. However, the applications under development for the future are not critical to the firm's ability to compete successfully and are mostly maintenance projects.

Support (Cell14): In these firms, neither current nor future IT activities are critical to the smooth operation of the firm. IT is viewed as playing the traditional back-office-support role without any potential for dramatically altering an organization's current or future operations and/or direction.

According to the characteristics of each firm, they can be located in different cells.

Hongta: this firm is in the strategic cell, because they have completely established an ERP system, and totally considered the business strategy based on IT strategy.

Baisha: this firm is in the transferring process from factory cell to strategic cell. The firm has reformed the business process and the integration system which has already been online and under development will greatly impact the business strategy.

Honghe: is in the process from turnaround cell to strategic cell. Although they also considered the IT-based business strategy, the firm still need integration of manufacturing system and management system.

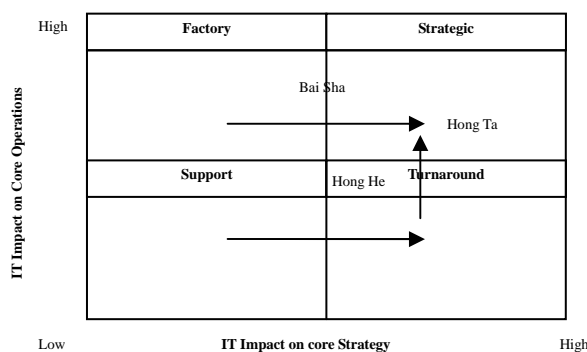


Figure 1 IT Strategic Grid of Each Firm

4. RISK MANAGEMENT METHODS COMPARISON

IT projects are high risk projects, it need careful consideration of the risk management. During the

process of implementing the IT projects, all of the three firms considered the projects risks in different way, and adopted different way to avoid risks.

In a recent literature published by Prof. Cyrus Gibson^[5], the IT project risks can be managed through a process from risk reorganization, risk assessment to risk reduction and cope with remaining risk. The methodology can be described in Figure 2. According to leadership, employee's perspective and project urgency, different implementation strategy should be adopted to avoid risks. For example, if the leadership is positive, the employee's perspective is negative but the project urgency is positive, then the implementation strategy should be guided evolution.

The IT projects implementation processes of three cigarettes firms can be assessed in table 2. That is, for Hongta company, the leadership is positive but the employee's perspective and project urgency are negative, so the theoretical implementation strategy is top-down coordinate. In Baisha, all of the three factors are positive, so the theoretical implementation strategy is big-bang. In Honghe, the leadership is positive, employee's perspective is positive, the project urgency is negative, so the theoretical implementation strategy is improvisation.

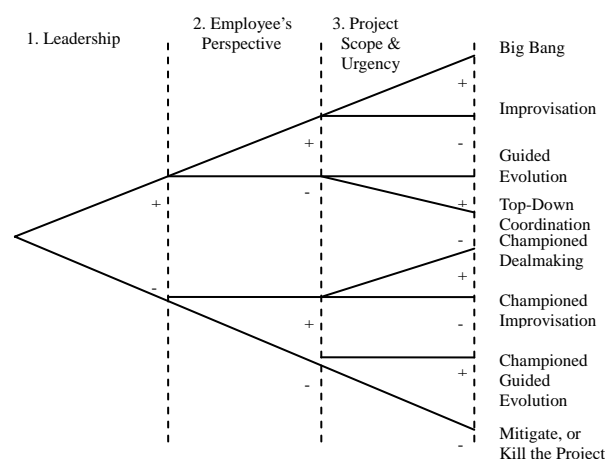


Figure 2 Project Risk Assessments

In order to achieve the actual IT projects risk management strategy of each firm, we talked with three levels of each firm, including CEO and CIO, middle manager and project team member. According to the description of how they organize the project, the actual IT project risk management strategies have been concluded and depicted in table 2.

Table 2 IT Projects Management Strategy

	Leadership	Employee's Perspective	Project Scope & Urgency	Actual PM Strategy	Theoretical PM Strategy
Hongta	+	-	-	Top-Down Coordination	Top-Down Coordination
Changsha	+	+	+	Big Bang	Big Bang
Honghe	+	+	-	Improvisation	Improvisation

5. CONCLUSIONS

According to the comparison in chapter 3, we can reach following conclusions about the IT transformation processes of each firm.

1) All of the firms have invested on IT, but they are in different stage. each of these firms have found the importance of IT, and want to improve their management as well as manufacturing system using new information technologies. But because the background and geography are quite different, they are in different IT absorption stage now.

2) Because of lack of IT strategy originally, these firms can jump from one period to another. Except for Hongta, other companies are planning to adopt the jumping strategy. That is, they hope that they can jump from lower stage directly to the highest stage. Technically it is possible, but considering the enterprise culture and management level, it is quite hard to omit one or two stages. The best way is to form a IT-based business strategy and implementing IT-related reform continuously.

3) IT does matter in Chinese enterprises. Enterprises in China are facing a great chance; they must set up new business architectures which will be competitive with other companies, especially the foreign companies. So IT infrastructures are still a problem for most of Chinese companies, and the new IT-based business processes still need to be developed. In order to enhance competitive advantage, the IT-based business strategies of each company should be set up as soon as possible.

4) Successful implementation experiences are that all of the three companies considered their enterprise culture during the ERP implementation process, and adopted different implementing methods accordingly to avoid risk. According to the project risk management theory, the actual IT projects management method is consistent with the theoretical expectation as long as the project is successful.

The works in this paper are still limited, because there are so broad topics considering the IT innovation in Chinese enterprises. Further research works will focus on IT risk analysis of Chinese state-owned large enterprises. With the rapid development of Chinese enterprises, IT will get more and more attention as well as expenditures. It is a serious problem about how to manage the IT projects risk. Although we introduce a new method in this paper, further research must be done

considering the concrete culture and diversity implementation strategies. The detail information about IT project management in each company will be collected in the next step, and we will try to find the basic principles of the risk management of IT project.

In addition, it is important to judge whether an IT project is valuable or not. There are several methods to judge the IT project value^[6]; one of these methods is using the evaluation index. But the index is quite different because of different culture background. According to the successful experience of Chinese companies, the evaluation index should be studied carefully, and a standard of evaluating IT projects should be given.

IT strategy is so close to business strategy. With the support of IT and IT-related new strategy analysis methods, how to establish competitive business strategy is very urgent problem. Some new characteristics and improvement should be made to use the strategic grid and other methods.

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