

**ORGANIZATIONAL CULTURE IMPACT IN ERP
IMPLEMENTATION IN CHINA**

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ABSTRACT	
<p>Organizational culture influences the Enterprise Resources Planning (ERP) system implementation, especially to the country such as China known as possessing complex cultures and traditions in the business society. Organizational culture is deeply embedded in the national culture. “If you want to succeed in doing business in China, you have to know the Chinese culture.” This way of saying also applies to the ERP implementation in China as well.</p> <p>There have been many studies on Critical Successful Factors (CSFs) in ERP implementation. A broad consensus on a number of factors has been discussed and identified (Reimers, 2002), such as top management involvement, business process re-engineering, qualification of project team members, training, communication, and so on.</p> <p>However, ERP implementations are complex undertakings (Akkermans & Helden, 2002). The success rate in ERP implementation in China at 10% is extremely low. It implies that the particular characteristics of Chinese organizational culture and tradition, which are quite different from the Western mentality in ERP system, must have a critical impact on ERP implementation.</p> <p>This paper intends to investigate the critical success factors in ERP implementation in a Chinese business context, in order to evaluate whether organizational culture affect the CSFs, and how organizational culture affect ERP implementation practices in China. The research is based on the cross case-study of the ERP projects deployed by two different types of company in China, state-owned company and foreign invested company.</p> <p>This paper offers the foundation for future research in the relative fields in aspect of the Chinese context. Meanwhile, the findings from research suggest that both the Chinese companies who want to apply an ERP system, and the foreign ERP vendors who want to succeed in Chinese ERP business, should consider and be well prepared for possible conflicts, delays, and other difficulties in ERP implementation, which are caused by the Chinese organizational culture.</p>	
Keywords:	
Organizational Culture, ERP implementation, Critical Success Factors (CSFs), Chinese ERP market, Chinese State-Owned Company (SOC) , Foreign-Invested Company (FIS)	

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I. INTRODUCTION

1. Research Introduction

1.1. Research Background

ERP has been well known in the global business world. An ERP system is defined as “configurable information systems packages that integrate information and information-based processes within and across functional areas in an organization.” (Kumar et al., 2002) ERP system is known by the significant benefits that can be gained, such as improved customer service, better production scheduling, and reduced manufacturing cost (Zhang et al., 2002), if the system is successfully deployed. An ERP system is expensive, risky, complex, and has a low success rate. The same contradiction occurs in China.

1.1.1. ERP is HOT in China

China, a 1.3-billion population country, has always been an interesting topic in the global business society. From the 1980s, when the ERP concept was introduced to China, to 2002, nearly 1,000 companies in China implemented material requirements planning (MRP), manufacturing resources planning (MRP II) or ERP systems (Zhang et al., 2002) till 2002. In Liang et al.’s (2004) paper, the figures from IDC (International Data Corporation) show, the ERP market in China grew from \$78.4 million in 1997 to \$243 million in 2002. From 2002 to 2005, China’s ERP market is expected to grow annually by 25%.

More and more companies have realized the huge benefit from successful implementation of the system. The Chinese ERP market has been growing fast in the last decade. However, circumstance seems not to be convincing presently. There are more failure cases rather than successful ones. Even though they might not be published, due to the vendors’ market reputations, they do exist. There are complaints about everything, such as the expensive cost, the complex deployment process, the relative

organizational conflicts, incompetent consultants, etc. The Chinese ERP market presents such an atmosphere mixed with expectation, misunderstanding, and distrust.

1.1.2. Western Vendors vs. Chinese Domestic Vendors

The partition of the Chinese ERP market began with the Western ERP vendors. SAP, Oracle, SSA, PeopleSoft, JDW, etc, have been playing important roles in the last twenty years. However, their path towards the China is not smooth. The most apparent reason is that Chinese culture in business is quite different from that in the western world. One popular saying is that, “Business in China is driven by personal relationships.” No wonder that the Western vendors would have barriers if, they neglect the Chinese specific organizational culture.

Meanwhile, the Chinese domestic ERP vendors are becoming more and more active. Most of them, such as, UFSOFT, Kingdee, or Genersoft, etc, began as financial accounting software vendors. Indeed, compared with the big global ERP vendors, such as SAP, Oracle, Peoplesoft, etc, they are still growing. However, they carry a certain advantage of understanding the Chinese business environment better, in aspect of Chinese organizational culture, Chinese traditional business processes and Chinese business networks, which those western bigger vendors don't have. Thus they started to occupy a share in the Chinese ERP market. They intend to contribute to the Chinese ERP business with their understanding of ERP systems, merged with the Chinese cultural environment. Indeed, there are many successful cases, though are the failed ones as well.

1.1.3. What Goes Wrong?

The success of ERP implementation provides significant benefits to the company, such as standard organization management, better production scheduling, and reduced manufacturing cost, better business performance, improved customer service, etc (Nah et al., 2001).

However, ERP implementations are complex undertakings (Akkermans & Helden, 2002). The successful implementation rate is low. Over 90% of ERP implementations are late or over budget (Martin, 1998) and the ERP implementation success rate is only about 33% (Zhang et al., 2002). Specifically, the success rate in China is extremely low at 10% (Zhu & Ma, 1999), which is much lower than the western countries. So, what went wrong?

1.2. Research Objectives

The extremely low success rate in ERP implementation in China implies that the particular characteristics of Chinese organizational culture and tradition, which are quite different from the Western mentality in ERP system, would have a critical impact on the ERP implementation. The author is trying to find the answers through series studies and researches in the Chinese ERP market.

Therefore, this paper intends to investigate the critical success factors (CSFs) in ERP implementation in Chinese business society, in order to evaluate whether organizational culture will influence the CSFs, and how the organizational culture affects ERP implementation practices in China. The research is based on case studies of the comparison of the ERP projects deployed by two different styles of company in China, Chinese state-owned style and foreign-invested style.

This paper intends to offer the foundation for future research in the relative fields in the aspect of Chinese business society. Meanwhile, the findings from research suggest that not only the Chinese companies who want to deploy the ERP system, but also the foreign ERP vendors who want to succeed in Chinese ERP business, should both consider and be well prepared for possible conflicts, delays, and other difficulties in ERP implementation, which are caused by the Chinese organizational culture.

1.3. Research Methodology

The approach has been to conduct an exploratory study of ERP implementation processes in China that involves general Chinese ERP market research and in-depth case studies.

The general research and review of the Chinese ERP market is based on information collected from both ERP vendors in China and internet sources. The review intends to give hints to the readers in order to stir up the interest and discussion from the readers.

The main empirical method in this paper is case study. Case studies are useful for studying a contemporary phenomenon in a real world context and creating and refining theory (Yin, 1989). Using case study as the research method enables a deeper observation and exploration of the sample companies in order to collect high quality and first-hand data. Two case studies are reported in order to allow a cross-case comparison. One case concerns the implementation of an ERP system in a Chinese state-owned company. The other is the implementation of an ERP system in a subsidiary of a foreign-invested company. These two typical types of companies represent two different organizational cultures from two different business societies, the Chinese end and the western end.

1.4. Thesis Structure

This paper is composed by three major parts: Part I – Introduction, Chapter 1-2; Part II – Literature Review, Chapter 3-5; and Part III – Empirical Research, Chapter 6-7.

Chapter 1 contains the research background, research objective, and the research methodology. As another composition of the introduction part, Chapter 2 illustrates the general status of Chinese ERP market.

Chapter 3 and Chapter 4 contain the literatures review, which concern the critical success factors and organizational culture impact in ERP implementation. In Chapter 5, the research framework and hypotheses are illustrated.

Chapter 6 and Chapter 7 are the empirical research part, which covers the exploration of ERP vendors market in China, two case studies, and relevant discussions, conclusions, and suggestions.

2. ERP Market in China

2.1. What is ERP to Chinese Companies?

What is ERP to Chinese companies? Confusion, wizardry, suffering, or, of the above?! The ERP market in China has been growing fast. More and more Chinese companies are trying to use ERP systems to improve their performance, or just for survival. However, for those companies that don't have strong technical capabilities or solid financial strength, the complexity and extremely low success rate, 10% (Zhang et al., 2002), has really made the companies hesitate to make the decision. Those 'fortune's favourites', which have the possibility to apply the ERP system, are also experiencing tremendous changes and conflicts.

So, what actually does an ERP system mean to Chinese companies? According to one source from CCID [WEB01] the value of the ERP system is to eliminate the information asymmetries of the different managing roles in the company.

- The decision makers need the system to obtain integrated information from transactions and management. So that they could make decisions for operating strategies more effectively.
- The system helps the sector managers to handle the information inside each sector and between the sectors. So that enables managers to monitor and supervise the work in their sectors or across sectors.
- The system allows the employees to record prompt and accurate data. Thus enables more effective and cooperative work.

2.2. Motivations

Through a set of market review and case studies, motivations for Chinese companies to apply an ERP system are illustrated as follows.

- Old system unable to support the development. Along with the expansion of the business, the old financial information system is not able to cope with the business volume anymore. Instead, it reduces the accuracy and promptness of the data. This issue is specially applied to those manual style financial systems.
- Data not integrated. Information is poorly shared. Information gaps exist between the mother company and its subsidiaries. Vertical financial management becomes impossible. Furthermore, fragmented data delays business operation.
- Poor management performance. Some companies have bad management systems. They intend to follow the managing mentality from the ERP system, and regard applying ERP system as an opportunity to improve the company's management performance.
- Organization structure reformed. Transformation of the organization system leads to the re-share of the business market. Government protection policy is no longer a competitive advantage for the companies. Companies need to find new methods, such as applying ERP systems, to move on with the business.

According to a source from Genersoft [WEB02], the motivation for Chinese companies to implement an ERP system is indicated in the following pie chart (See Figure 2.1).

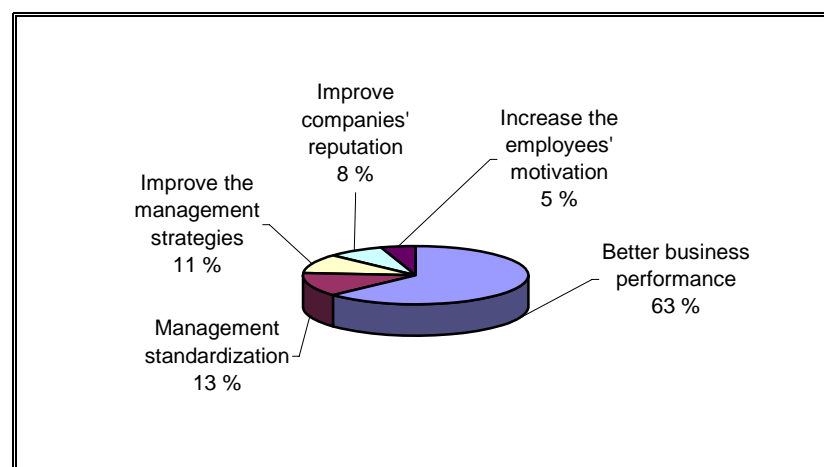


Figure 2.1 Motivations to implement ERP systems (Genersoft [WEB02])

2.3. Problems

Once a company has found problems and decided to apply an ERP system to solve these problems, new problems occur.

Confusion 1: Keeping the old business traditions, or applying a totally new business strategy?

The ERP system usually requires BPR (Business Procedure Reengineering) partially or completely. However, most companies have built up their own business traditions already over the years, which vary with the companies' industrial and cultural backgrounds. It is impossible to expect the company to totally abandon old traditions in favour of the new rules required by the system.

Confusion 2: Develop in-house or apply Off-shelf products?

This is an argument always being discussed. Companies always want to find the software that can most fit their business procedures. Due to the speciality of the culture, some of the global off-shelf products are not suitable for Chinese companies. However, on the other hand, domestic products are not mature enough in the technical aspect. Therefore, some of the Chinese companies decide to develop their own ERP systems. For example, the biggest Chinese steel manufacturer, Bao Steel Group has successfully developed most of their ERP and SCM (Supply Chain Management) modules by themselves. However, in-house developing needs a longer time and is more complex to implement. The system is tailor-designed specifically for the company and would work more effectively. However, in-house developing requires a huge R&D cost and high technical skills, which might not be possible for all the companies.

According to a source from Genersoft [WEB02], the following pie chart indicates the ERP deploying methods used commonly in China(See Figure 2.2).

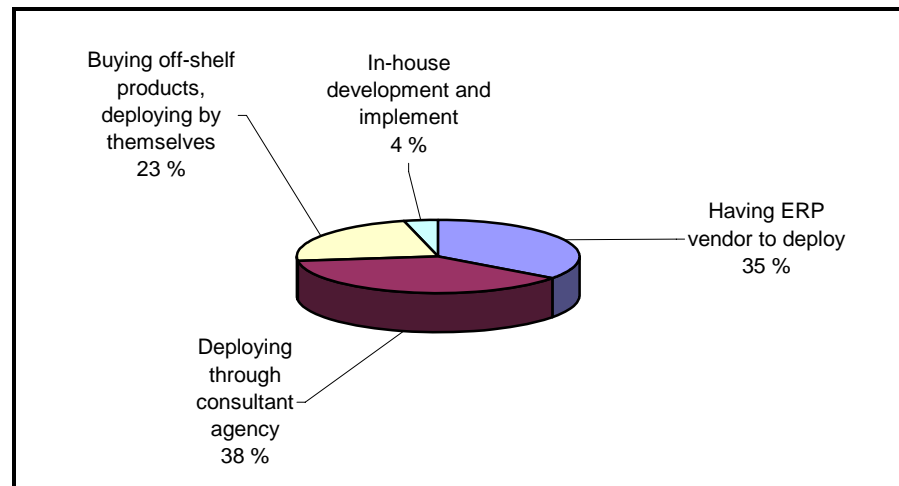


Figure 2.2 Main methods used in ERP implementation (Genersoft [WEB02])

Confusion 3: Keep the legacy system or transfer completely to the new system?

Some of the companies might already have some kind of information systems. Indeed, the companies would want to keep the legacy as much as possible due to their previous investment. Therefore, the ERP system is usually expected to be compatible. It has to be understood that using the legacy system at the same time might compromise the effect of the new ERP system.

Confusion 4: Choosing foreign products or domestic ones?

In order to illustrate the comparison between the characteristics of foreign products and Chinese domestic ones, the author makes a summarized table (See Table 2.1) displayed as follow.

	Foreign Brands	Domestic Brands
Product Name	SAP, Oracle, PeopleSoft	UFsoft, Kingdee, Genersoft
Product Maturity	Mature	Under development
Implementing Experience	High	Low
Functionality	Complete	Specialized in certain fields
Price	High	Low
Cost of maintenance and service	High	Low
Understanding the Chinese business culture and tradition	Unfamiliar	Familiar
Communication with the local users	Problematic	Easy

Table 2.1 Comparison between the Western and Chinese domestic ERP products

Obviously, both parties have advantages and disadvantages. SAP, Oracle or PeopleSoft, their products are regarded as good solutions, but with huge investment. On the other hand, for the medium and small size companies, the domestic products could be an ideal solution.

Confusion 5: Best of Breed or Add-ons?

BOB – A number of firms choose a “Best of Breed” approach where they attempt to mix and match modules in a way that best meets their needs [O’Leary, 2000, p.33] or achieve the best performance. BOBs usually cost a lot, not only for the search cost (to find the best module), but also the interfaces integration cost between the different modules. Furthermore, ERP systems have new versions every two to five years [O’Leary, 2000, p.33]. It could cause the synchronous problem among the different modules as the system developed. According to Freeman (1997), in many cases “the costs of interfacing specialized manufacturing software in an integrated ERP system far out weight the benefits.”

“Add-ons” – For the ERP systems, various vendors have developed a wide range of add-ons additional software that provides increased capabilities [O’Leary, 2000, p.33]. This would naturally happen while the company’s business is expanding.

For Chinese companies, what they actually need, at the start, is a system that is easier to begin with. It should have lower integrating risk, lower-cost, and have a good implementing and consulting service. Later on, as the company becomes more familiar and experienced with the system, more modules can be added according to their development.

II. LITERATURE REVIEW

3. Introduction

ERP – “Enterprise Resource Planning”, was the major success story of the 1990’s (Beekhuyzen et al., 2002), and Davenport (2000) suggests that enterprise systems represent one of the most important information technology categories to emerge in the last decade. Esteves and Pastor (2001) propose ERP systems as software packages composed of several modules, such as human resources, sales finance and production, providing cross-organisation integration of data through embedded business processes. Chen (2001) states an ERP system helps the different parts of the organisation and distribution with external suppliers and customers into a tightly integrated system with shared data and visibility.

While ERP applications are spreading worldwide, problems related to cultural mismatches became one of the challenges that affect this global diffusion. Molla and Loukis (2005) state that the transfer of an information system like ERP – typically developed in industrialized countries – to developing countries is often marred by problems of mismatch with local cultural, economic and regulatory requirements. While ERP is a global product, most of the ERP vendors are located either in North America or in Western Europe (Molla & Loukis, 2005). As a result, the developers’ interpretations of business systems are likely to be reflected in and influence the software (Orlikowski, 1992). ERP systems thus incorporate values and practices that will not necessarily match all environments (Molla & Loukis, 2005).

Since the 1980’s, there has been an increase in the attention paid to organizational culture as an important determinant of organizational success. A number of scholars have developed integrative frameworks of organizational culture (Allaire & Firsirotu, 1984; Hatch, 1993; Martin, 1992; Ott, 1989; Schein, 1995, 1990), but little consensus exists with regard to a general theory of organizational culture (Fey & Denison, 2000). Many experts began to argue that developing a strong organizational culture is essential

for success (Scholl, 2003). The study of the organizational culture in ERP implementation has also been spread out.

This chapter covers the discussions on the ERP implementation process, the Critical Success Factors in ERP implementation, and Organizational Culture impact in ERP implementation. The discussion based on the explorative review on the former literatures.

3.1. What is ERP?

It seems to be superfluous to duplicate the definition of ERP system, though it doesn't. The author considers that it is necessary to reaffirm the concept of ERP and its relative characteristics. This chapter provides a brief introduction of what ERP is and its characteristics, reviews motivations to implement an ERP system, and discusses the advantages of ERP systems and the ERP implementation process.

Rosemann (1999) described the ERP system as packaged (but customisable) software applications, which manage data from various organizational activities and provide a fully integrated solution to major organizational data management problems. They provide for both the core administrative functions, such as human resource management and accounting, as well as integrated modules which can be selected to support key business processes, such as warehousing, production and client management. (Rosemann, 1999)

O'Leary defined ERP system as "computer-based systems designed to process an organization's transactions and facilitate integrated and real-time planning, production, and customer response." [O'Leary, 2000, p.27]

He concluded the following characteristics of ERP system:

- ERP systems are packaged software designed for a client server environment, whether traditional or web-based.
- ERP systems integrate the majority of a business's processes.
- ERP systems process a large majority of an organization's transactions.

- ERP systems use an enterprise-wide database that typically stores each piece of data once.
- ERP systems allow access to the data in real time.
- In some cases, ERP allows an integration of transaction processing and planning activities (e.g., production planning).

Moreover, ERP systems increasingly are assumed to have the following additional characteristics:

- support for multiple currencies and languages (critical for multinational companies);
- support for specific industries (e.g., SAP supports a wide range of industries, including oil and gas, health care, chemicals, and banking);
- ability to customize without programming (e.g., switch setting).

Nah et al. (2001) described an ERP system as a “packaged business software system that enables a company to manage the efficient and effective use of resources (materials, human resources, finance, etc.) by providing a total, integrated solution for organization’s information-processing needs. It supports a process-oriented view of the business as well as business processes standardized across the enterprise.” Among the most important attributes of ERP are its abilities to: (Nah et al., 2001)

- automate and integrate an organization’s business processes;
- share common data and practices across the entire enterprise; and
- produce and access information in a real-time environment.

3.2. CSFs in ERP Implementation

ERP is well-known for its power. ERP is also well-known for its high failure rate. The high failure rate of ERP implementation calls for a better understanding of its critical success factors (Somers et al., 2000). Furthermore, ERP systems touch so many aspects of a company’s internal and external operations, their successful deployment and use are critical to organizational performance and survival (Markus & Tanis et al., 2000). So, what are the key critical factors for ERP implementation success then?

3.2.1. ERP Implementation

Several researchers have developed different models for ERP implementations. Parr & Shanks (2000) described that the implementation of an ERP system implies that a company must focus on, evaluate and define relevant company processes in precise detail. Implementing the ERP system is itself a process that begins with planning for the system. After planning is complete, a project team embarks on and then moves through a number of discrete project phases. After the system is up and running, there may be a post-implementation review and later a stabilization phase. (Parr & Shanks, 2000)

Bancroft et al. (1998) presented a view of the implementation process which was derived from discussions with 20 practitioners and from studies of three multinational corporation implementation projects. The Bancroft et al. (1998) model has five phases: focus, as is, to be, construction and testing and actual implementation. The model and key activities involved are illustrated in the following table. (See Table 3.1)

Focus	As is	To be	Construction and testing	Actual implementation
<ul style="list-style-type: none"> ▪ setting-up of the steering committee 	<ul style="list-style-type: none"> ▪ analyzing current business processes 	<ul style="list-style-type: none"> ▪ entailing high-level design 	<ul style="list-style-type: none"> ▪ developing comprehensive configuration 	<ul style="list-style-type: none"> ▪ building networks
<ul style="list-style-type: none"> ▪ selecting and structuring project team 	<ul style="list-style-type: none"> ▪ installing ERP system 	<ul style="list-style-type: none"> ▪ detailed designing subject to user acceptance 	<ul style="list-style-type: none"> ▪ populating the test instance with real data 	<ul style="list-style-type: none"> ▪ installing desktops
<ul style="list-style-type: none"> ▪ developing project's guiding principles ▪ creating project plan 	<ul style="list-style-type: none"> ▪ mapping the business processes ▪ training the project team 	<ul style="list-style-type: none"> ▪ interactive prototyping ▪ constant communicating with users 	<ul style="list-style-type: none"> ▪ building and testing interfaces ▪ writing and testing reports ▪ system and user testing 	<ul style="list-style-type: none"> ▪ managing user training and support

Table 3.1 ERP Life cycle model and key activities involved (Bancroft, 1998)

Ross (1998) illustrates the path of an ERP implementation consisting of five stages: design, implementation, stabilization, continuous improvement and transformation. Ross' (1998) implementation covers several of Bancroft et al.'s (1998) phases: as is, to be, construction and testing and actual implementation. For Ross (1998), stabilization occurs after cut-over and is a period of time in which system problems are fixed and organizational performance consequently improves.

Markus & Tanis (1999) developed a four-phase model of ERP implementation, consisting of: chartering, project shakedown, and onwards and upwards. Markus & Tanis's (2000) ERP life cycle model was often used while classifying the CSFs identified. The process theory focuses on the sequence of events leading up to implementation completion (Nah et al., 2001). Markus & Tanis (2000) identified the following four phases in an ERP life cycle.

- chartering – decision defining the business case and solution constraints. The chartering phase comprises decisions leading to funding of the ERP system project. Key players in the phase include vendors, consultants, company executives, and IT specialists. Key activities included initiation of idea to adopt ERP, developing business case, decision on whether to proceed with ERP or not, initiation of search for project leader/champion, selection of software and implementation partner, and project planning and scheduling.
- project – getting system and end users up and running. The project phase comprises system configuration and rollout. Key players include the project manager, project team members (mainly from business units and functional areas), internal IT specialists, vendors, and consultants. Key activities include software configuration, system integration, testing, data conversion, training, and rollout. In this phase, the implementation partners must not only be knowledgeable in their area of focus, but they must also work closely and well together to achieve the organizational goal of ERP implementation.
- shakedown – stabilizing, eliminating “bugs”, getting to normal operations. The shakedown phase refers to the period of time from “going live” until “normal operation” or “routine use” has been achieved. Key activities include bug fixing and rework, system performance tuning, retraining, and staffing up to handle temporary inefficiencies. In this phase, the errors of prior causes can be felt, typically in the form of reduced productivity or business disruption (Markus and Tanis 2000). Hence, it is important to monitor and constantly make adjustments to the system until the “bugs” are eliminated and the system is stabilized.

- onward and upward – maintaining systems, supporting users, getting results, upgrading, system extensions. The onward and upward phase refers to ongoing maintenance and enhancement of the ERP system and relevant business processes to fit the evolving business needs of the organization. It continues from normal operation until the system is replaced with an upgrade or a different system. Key players include operational managers, end users, and IT support personnel when upgrades are concerned. Key activities include continuous business improvement, additional user skill building, upgrading to new software releases, and post-implementation benefit assessment.

The phases in Markus & Tanis' (2000) ERP life cycle model are in line with the stages of the traditional systems development life cycle, as presented in the following chart (See Figure 3.1).

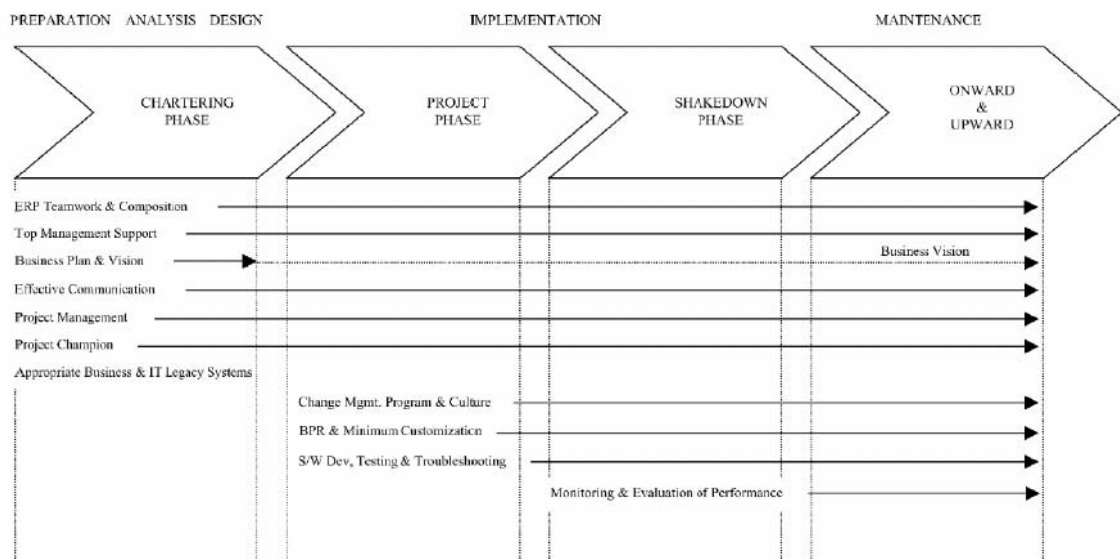


Figure 3.1 Classification of CSFs of ERP implementation into Markus & Tanis' (2000) Process-oriented ERP life cycle model

3.2.2. CSFs in ERP Implementation

As different factors are important in different stages, it is important to classify the CSFs identified into the phases of the ERP implementation life cycle where the factors may

come into play (Nah et al., 2001). Many authors use CSFs, so generally that they could be viewed as possible influences on success rather than causal factors.

Parr & Shanks (2000) argue that CSFs in ERP implementation are defined factors which, while not sufficient to ensure a successful outcome, are necessary to achieve success. They suggest that "...both the concepts of causality, and necessary and sufficient conditions", are concepts so rigorous that they were regarded by the authors as unachievable in the analysis of complex social, organizational and technical interactions such as ERP implementation.

Bancroft et al. (1998) identified critical success factors in ERP implementation, from his studies of three multinational company implementation projects, such as top management support, the presence of a champion, good communication with shareholders, and effective project management.

Feeny & Willcocks (1998) stressed the importance of developing key IT capabilities. They identified nine core IT capabilities as the critical factors in ERP implementation, such as, IT leadership, Business systems thinking, Relationship building, Architecture planning, Technology fixing, Informed buying, Contract facilitation, Contract monitoring, and Supplier development. Meanwhile, Feeny & Willcocks (1998) suggested hiring skilful employees rather than relying on long-term consultant relationship.

Parr & Shanks (2000) concluded ten factors as the CSFs for ERP implementation, including: management support, release of business experts with relevant knowledge onto the project on a full-time basis, empowered decision makers, deliverable dates, champion, vanilla ERP, smaller scope, definition of scope and goals, balanced team, commitment to change, and etc.

Akkermans & Helden (2002) built their research on the base of Somers & Nelson's (2001) CSFs list. The research applied the top 10 CSFs of the CSFs list (which listed 21 CSFs) to a case study of specific ERP implementation that had been investigated by the authors at an earlier time. The 10 CSFs are top management support, project team competence, interdepartmental co-operation, clear goals and objectives, project

management, interdepartmental communication, management of expectation, project champion, vendor support, careful package selection. Case analysis showed that all these CSFs were interrelated in the sense that changes in one of them influenced all the others, directly or indirectly. Moreover, they all influenced each other in the same direction, i.e. all positive or all negative, leading to a self-perpetuating or cycle of good or poor performance.

Furthermore, Akkermans & Helden (2002) also found that interdepartmental communication and collaboration within the project team are the core process for project progress. Presence and attitudes of the surrounding stakeholders, i.e. top management, project management, project champion and software vendor, were identified as the root causes driving performance of this core process.

Reimers (2002) has reviewed the previous literatures concerning the CSFs. He summarized the former studies in terms of identified or mentioned critical success factors, as illustrated in the following table (See Table 3.2), from where it's found that there seems to be a broad consensus on a number of factors including top management involvement, team configuration, qualification of project team members, and so on (Reimers, 2002). Furthermore, he also found in his research that ownership characteristics are strongly associated with implementation process characteristics; the association of ownership structures with implementation results is much less pronounced. In contrast, it emerged that project governance, specifically the role and decision making style of the steering committee, could be associated with a broad set of outcome variables after controlling for ownership and other important context factors. (Reimers, 2002)

	Austin & Cameron Nolan	Cameron & Meyer	Holland & Light	Bingi & Sharma	Brown & Vessey	Parr, Shanks & Darke	Sumner
Support/commitment by top management		x	x	x	x	x	x
Team configuration/Teamwork	x	x			x	x	x
Personnel		x	x	x	x	x	
Customization; "Vanilla" approach		x	x	x	x	x	
Consultation/Consultants			x	x	x		x
Business vision/goals/justification		x	x			x	x
Project management (schedule and plans; deliverable dates)	x	x	x			x	x
Reengineering/commitment to change			x		x	x	x
Training		x		x			x
Phased vs. Big Bang	x		x		x		
Range of functionality/project scope			x		x	x	
Project team empowerment		x				x	
Communication		x	x				
Legacy system/integration			x	x			
Project manager; champion						x	x
Implementation time				x			
Client acceptance			x				
Monitoring and feedback			x				
Troubleshooting			x				
Employee retention				x			
User involvement							x
Project incentives				x			
Incentive alignment	x						
Vendors				x			
Decision making		x					

Table 3.2 Critical success factors mentioned in the literature (Reimers, 2002)

While, Nah et al. (2001), identified 11 factors to be critical to ERP implementation success – ERP teamwork and composition; change management program and culture; top management support; business plan and vision; business process reengineering with minimum customization; project management; monitoring and evaluation of performance; effective communication; software development, testing and troubleshooting; project champion; appropriate business and IT legacy systems, etc.

Again, based on the ERP literature, Zhang et al. (2000) classified their hypothesized factors into five categories with: (1) organizational environments, including top management support, re-engineering business process, effective project management, and company-wide commitment; (2) people characteristics, including education & training, and user involvement both at system requirements definition and ERP project implementation; (3) technical problems, including suitability of software & hardware

and data accuracy; (4) ERP vendor commitment, including vendor support; and (5) cultural impact including organizational cultures. The research framework is illustrated as follow (See Figure 3.2). In their paper, organizational culture becomes a CSF. It implies that the researcher's study occurred in another country, China, whose culture is different from traditional ERP implementers. Most ERP vendors come from Europe and America. The difference of cultures between Western countries where the ERP systems are developed and China makes culture an important factor.

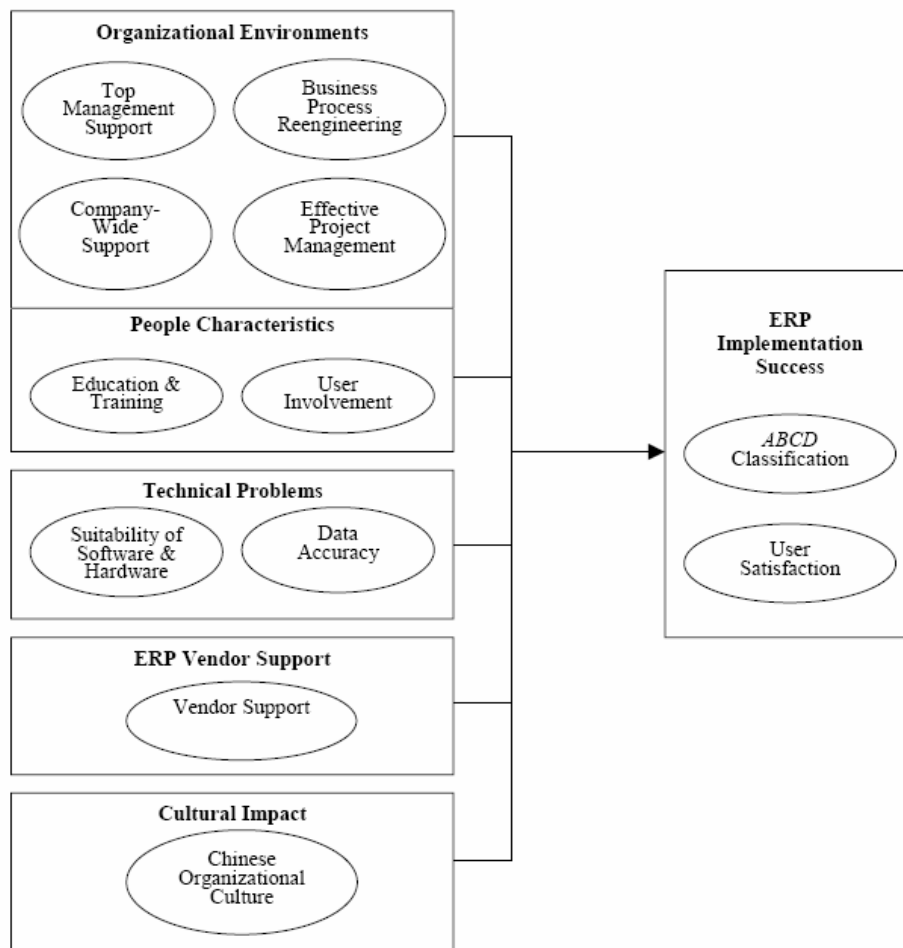


Figure 3.2 Conceptual research model of ERP implementation success in China (Zhang et al., 2002)

4. Organizational Culture Impact in ERP Implementation

4.1. What is Organizational Culture?

The growth of the ERP systems has been enormous during the last decades. However, the time and cost to implement ERP systems and other critical success factors have undermined its true capabilities (Thavapragasam, 2003). Hong and Kim (2002) found in their research that ERP implementation success significantly depends on the organizational fit of ERP. However, in many cases, organizational culture is often overlooked while implementing ERP systems (Thavapragasam, 2003). Therefore, it is essential to understand the item “Organizational Culture” before we carry on with the research.

A single definition of organizational culture has proven to be very elusive (Scholl, 2003). No one definition of organizational culture has emerged in the literature. For most organizational writers, “culture” is a stable, conservative and resistant force that is likely to change only through management intervention. As recently in 1999, for example, Hendry stated: “Because of its deeply embedded nature any culture, societal institutional, or organizational, is resistant to change.” (Hendry, 1999) Both managerially and critically minded organizational researchers assume that resistance to change is rooted in culture stability (or, in critical terminology, that resistance to managerial oppression can be rooted in the solidarity of working class culture) (Hatch, 1993). Following are the two ways in which cultures often defined (Scholl, 2003).

1. Outcomes – Defining culture as a manifest pattern of behavior; that is using the term culture to describe patterns of cross individual behavioral consistency. (Scholl, 2003)

According to Schein (1985), culture is “a pattern of basic assumptions – invented, discovered, or developed by a given group as it learns to scope with its problems of external adaptation and internal integration – that have worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think and feel in relation to those problems.”

Hofstede (1983) describes organizational culture as “the way things are done in the business.” More specifically, organizational culture is the “shared perceptions, patterns of belief, symbols, rites and rituals and myths that evolve over time and function as the glue that holds the organization together.” (Zamanou & Glaser, 1994) Based on these definitions, it is easy to see that the existing culture of an organization provides a corporate framework that provides guidance on issues like how work is done, the use of technology, how people think and standards for interaction and communication (Sheng et al., 2003).

2. Process – Defining culture as a set of mechanisms creating cross individual behavioral consistency. In this case, culture is defined as the informal values, norms, and beliefs that control how individuals and groups in an organization interact with each other and with people outside the organization (Scholl, 2003).

Sheng, Pearson & Crosby (2003) described organization’s culture as a kind of shared perceptions and beliefs that are fostered and cultivated by communications and interactions among people inside and outside the organization (Sheng et al., 2003). These perceptions and beliefs then effect and can be influenced by people’s behaviors on things like how to solve problems, how to conduct a job and how to communicate (Bates et al., 1995). In turn, people’s behaviors can influence the firm’s performance (Sheng et al., 2003). It has been shown that organizational culture (and various subcultures within the organization) can have a positive effect on competitive advantage, increases productivity and a firm’s performance (Yeung et al., 1991). On the other hand, on an individual’s level, Zamanou & Glaser (1994) found organizational culture could affect an employee’s participation and involvement.

4.2. Organizational Culture Impact in ERP Implementation

Organizational culture is known to be important in the success of projects involving significant organizational change (Stewart et al., 2000). Kampmeier (1998) states that one reason for many ERP failures are that we pay insufficient attention to the culture of the organizations with which we work. Schneider (1999) reports that many companies

have paid the price for ignoring corporate culture in the rush to implement an ERP system. Capron & Kuiper (1998) state that even though most companies are unwilling to admit it, there is often, much in the corporate ethos and culture that negatively impacts the likelihood of success.

Mobley et al. (2005) indicate that a strong organizational culture can be a primary generator of real motivation and commitment. In a strong and cohesive culture, the organizations core values are both intensely held and widely shared (Mobley et al., 2005). This high intensity of common beliefs makes it relatively easier to draw consensus among employees, to build a focus on important goals and objective, to reduce potential conflicts, to cultivate a learning environment, and to lower staff turnover (Mobley et al., 2005).

Steward et al. (2000) suggested that in both initial ERP implementation and ERP upgrades, the issues of organizational culture relating to risk orientation and user involvement are key ERP implementation variables. Moreover, leadership practices within the change management programs are important in overcoming resistance, but leadership alone may not overcome other cultural aspects impeding the adoption and exploitation of the ERP. Steward et al. (2000) state also that an organization's existing culture is therefore likely to have profound effects on the planning process, the implementation process and in the operation of the completed project.

Fisher (1997) suggests that the working culture has programmed learned helplessness and non-responsibility into workers, where obedience takes precedence over initiative, discipline over risk taking and where showing up for work every day is considered fulfillment of the work contract (Stewart et al., 2000).

Breen (1995) suggests that to successfully manage complex projects, an initiative must be taken in educating, encouraging and empowering project teams to cut across organizational barriers allowing organizations to overcome natural barriers to successful project management.

Hall (1976) divided cultures into high and low context categories. According to him, a high context culture is one in which people are more tightly attached to each other and,

because of this strong relationship, a social hierarchy exist that expect individuals to keep their expressions within their control and to communicate information in a simple way but with profound meanings. On the other hand, people in Low context culture are individualised and less attached to others. When dealing with new technology, high context cultures adopt it only if they fully understood its technical aspects in depth and are assured that there are no risks attached while low context cultures feel comfortable in dealing with new technology. People in these culture feel uncomfortable working with old systems for a long time and prefer to use new things.

5. Research Framework and Hypotheses

5.1.1. Organizational Culture

Organizational culture is embedded in national culture (Zhang et al., 2002). The difference of cultures between Western countries, where ERP systems are developed, and China, where these ERP systems are implemented, makes culture an important determinant of implementation success (Zhang et al., 2002). Molla & Loukis (2005) state that the transfer of information system like ERP – typically developed in industrialized countries – to developing countries is often marred by problems of mismatch with local cultural, economic and regulatory requirements. All business units at different countries had their own way of doing things (Soh et al., 2000) because of different business processes and local requirements generated by national and local differences. Thus, the initial plan had to be altered by allowing localized solutions and decentralized ERP implementations, in order to evade the conflicts.

Furthermore, two aspects related with organizational culture are identified by Zhang et al. (2002) to be associated with ERP implementation success: 1) Clash level of the culture embedded in the ERP package with the company's organizational culture. In traditional Chinese companies, the management usually trusts more extrapolations from experience, and intuition, while making decisions, even the information system has been implemented. Since usually, it's the top manager who makes the decision, thus deduce the need to exchange information between managers (Zhang et al., 2002). In long term, such behaviour will lead the distrust or even conflict between the top management and the managers.

2) Level of collectivism in the organizational culture. Harrison et al. (2000) stressed that collectivism is the characteristics of Chinese organizational culture. Even the collectivism has slowly faded while Chinese business society is developing; it is still embedded deeply in the Chinese organizational culture, especially in those traditional state-owned companies. Cooperation across different functional areas entailed by ERP system is less likely to be achieved in Chinese organizations (Zhang et al., 2002).

Therefore, compared with the foreign companies, team work mentality is seldom reflected in those Chinese traditional companies.

Molla & Loukis (2005) suggest that, as ERP systems diffuse into developing countries, it is essential to be aware of the implications of cultural assumptions embedded in ERP software and those reflected in developing country organizations.

5.1.2. Hofstede's Organizational Culture Theory

Hofstede demonstrated that there are national and regional cultural groupings that affect the behavior of organizations. Hofstede identified five characteristics of culture in his study of national influences: collectivism-individualism, power distance, uncertainty avoidance, as well as masculinity-femininity, and long term-short term orientation.

Long term-short term orientation is the fifth dimension of Hofstede which was added after the original four to try to distinguish the difference in thinking between the East and West. From his original IBM studies, this difference was something that could not be deduced. Therefore, Hofstede created a Chinese value survey which was distributed across 23 countries. From these results, and with an understanding of the influence of the teaching of Confucius on the East, long term vs. short term orientation became the fifth cultural dimension. The Chinese Culture Connection (1987) brings Hofstede's work up to date (Jackson and Bak, 1998).

Jackson & Bak (1998) review the former literatures, which discuss the value dimension in Hofstede's organizational culture theory, in the context of Chinese culture background. The author intends to borrow Hofstede's framework together with Jackson & Bak's (1998) to help the readers understand the organizational characteristics in Chinese context.

Power distance: This refers to people beliefs about unequal distributions of power and status, and their acceptance of this inequality by declaring it a precise way of keeping social system balance. In high power distance cultures, individuals with positions in a hierarchy inherit considerable power (Hofstede, 1983). Power distance is high in China,

with the inapproachability of the top stratum, but with distances between middle management, supervisors and workers being somewhat smaller (Locket, 1987; Warner, 1993). The respect for hierarchy and authority may well be rooted in Confucianism, together with a regard for age as a source of authority which is largely unknown in business in the West (Jackson & Bak, 1998).

Uncertainty avoidance: It refers to degree of uncomfortable that people feel during imprecision and haziness situation. In high uncertainty avoidance cultures organizations having characteristics of providing resistance to new technology and are not taking potential risks about technology (Hofstede, 1983). This resistance can also be found at individual level, where they show their dissatisfaction with new technology because of getting use to doing things by traditional way (Shore & Venkatachalam 1996). Chimezie et al. (1993) indicate a strong avoidance of uncertainty among Chinese, with a strong desire to maintain social order with a degree of predictability. But Hofstede (1991) in his later work argues that uncertainty avoidance may be an irrelevant concept which is linked to the question of “truth”. For instance, the Chinese manager may well be motivated to save “face” and to tell the other person what they want to hear, rather than what may be regarded as the absolute truth in Western eyes (Jackson & Bak, 1998).

Individualism - Collectivism: This culture dimension describes the degree of relationship between the individual and the group (Everdingen, 2003). In individualistic countries, relation between individuals is loose and people care more about themselves and their family, while in collectivist cultures, individual considers himself to be part of society and thinking about overall society rather than personal benefits (Yeniyurt and Townsend, 2003). As one would expect collectivism is high in Chinese culture (Hui, 1990). However, the Chinese increased economic and the reform and open policy has weakened the collectivism characteristics in Chinese companies. The individualism has shown a sign in recent years in China.

Masculinity - Femininity: The concept of masculinity represents an emphasis on competition and the centrality of work in one’s life. In a masculine culture, most persons believe that only men should worry about lucrative careers and that women shouldn’t have to work hard or study if they don’t want to. Japan is considered by

Hofstede to be the most "masculine" culture. However, there is little direct information on China about masculinity-femininity dimension (Jackson & Bak, 1998).

Long term - Short term orientation: Rather than a short-term achievement orientation of many Western societies, China is characterized by long-term values (Hofstede, 1991). Different perspectives on time between China and the West have implication for the perception of objectives, where the achievement of short-term objectives as an indicator of individual achievement may not be appropriate. In addition, some researcher believe that Eastern cultures have a fatalistic view of destiny, where cause and effect is more likely to be attributed to external factors than internal factor which can be controlled by the individual. Therefore, they believe that goal-based individual reward systems may not be appropriate (Jackson & Bak, 1998). However, some of the other researchers believe that the value system in China is changing (Jackson & Bak, 1998).

5.2. Similar Researches

There seems to be few literatures concerning the similar research of organizational culture factor in ERP implementation in other Asian countries besides China. Nevertheless, the ones there are call up the interest and attention to the research between the organizational culture and ERP implementation in Asia.

In Hong & Kims' (2001) research, they define the concept of organizational fit of ERP and empirically examine its impact on ERP implementation success along with the moderating roles of ERP implementation contingency variables such as ERP adaptation, process adaptation, and organizational resistance. The empirical research is conducted by the survey of 34 organizations in Korea. They found that organizational fit of ERP has a significant effect on ERP implementation success. In addition, they find that both ERP and process adaptations interact with organizational fit of ERP on ERP implementation success. (Hong & Kim, 2001)

Rajapakse & Seddon's (2005) explore the importance of the impact of national/organizational culture on the adoption of western based ERP software in developing countries in Asia, through six case studies carry out in Sri Lanka. They

argue that the business practices embedded in western-based ERP software are likely to reflect US and European business and national cultures, and that when such systems are implemented in developing countries in Asia, problems may be experienced due to mismatch between cultural assumptions and practices embedded in the software and those in the client organizations. In their findings, four opposite cultural forces are shown (See Table 5.1) between the Asian culture and ERP (Western) culture, which are regarded working against the ERP adoptions in developing countries in Asia. (Rajapakse & Seddon, 2005)

	National Culture (Asia)	ERP Culture = West
Power distance	Centralised	Decentralised
Power distance	Low level of accountability and discipline	High level of accountability and discipline
Individualism	Low level of commitment	High level of commitment
Individualism	Low level of change	High level of change

Table 5.1 Four cultural clashes for ERP systems in developing countries in Asia (Rajapakse & Seddon, 2005)

In another research of organizational culture in ERP implementation, Sheu et al. (2004) investigate the dimensions of national differences and how they affect ERP implementation practices across nations. They use both case research and secondary data to examine ERP implementation at several multinational companies in the US, Taiwan, China, and Europe. The research is based on the framework developed by Eindr Dor et al. (1992), displayed as follow (See Figure 5.2). Their findings suggest that language, culture, politics, government regulations, management style, and labor skills impact various ERP implementation practise at different countries.

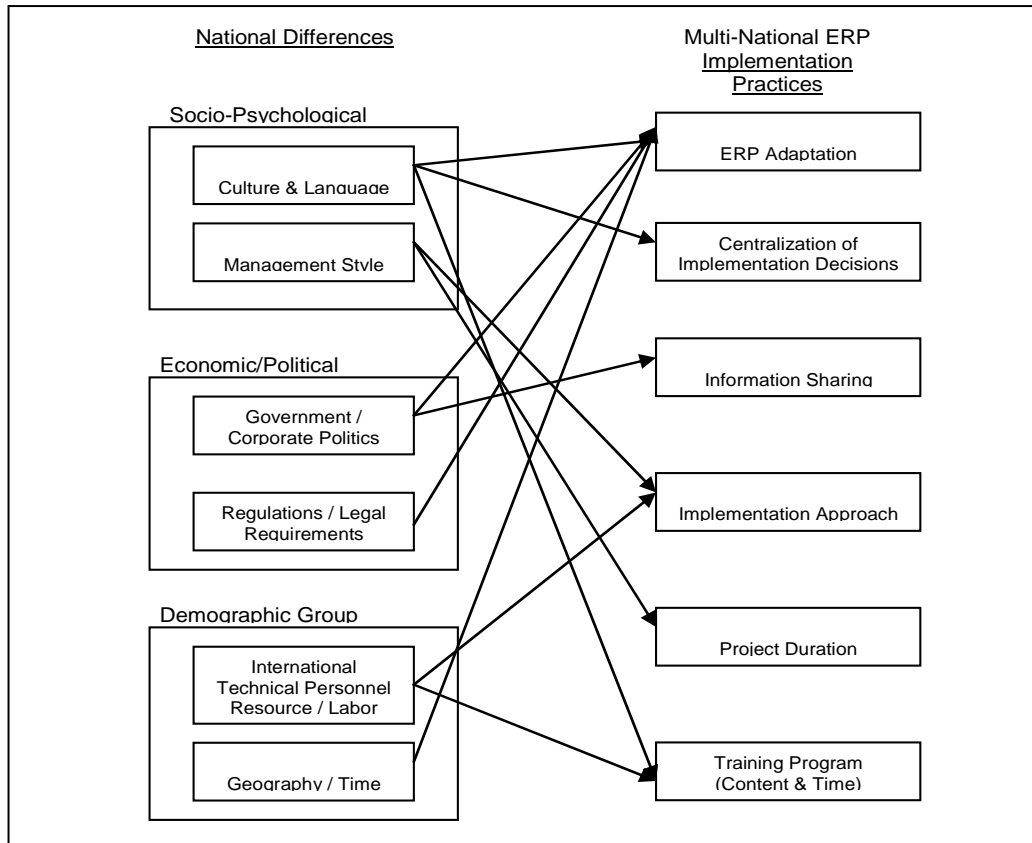


Figure 5.1 National differences and multinational ERP implementation practices (Ein-Dor et al., 1992)

5.3. CSFs in ERP Implementation in China

Markus et al. identified a series of problems commonly occur during the ERP life cycle, of which many of them are hard to recognize and diagnose due to multiple interacting causes and varying symptoms and effects (Markus & Tanis et al., 2000).

Indeed, the ERP implementations are socially complex activities (Markus & Tanis et al., 2000). A dozen of external companies get involved, such as the ERP vendor, vendors of ERP product extensions, vendors of supporting hardware, software and telecommunications capabilities, implementation consultants and so forth. Thus makes the implementation work really challenge one. Many things can go wrong that will lead to the failure of the ERP project directly or indirectly.

Organizational culture is deeply embedded in the national culture. This is implied by the above discussion of Hofstede's organizational culture theory. It is difficult and also insignificant to talk about an organization without mentioning its cultural characteristics. Therefore, in this paper, the following critical success factors will be discussed, which are seen most reflecting the distinctness of Chinese context.

- ✓ ERP Teamwork and composition
- ✓ Top management support and Management style
- ✓ Understanding of ERP system and Having clear business plan and vision
- ✓ Business process re-engineering (BPR) and Software modification
- ✓ Personnel resources
- ✓ Sufficient education and training

5.3.1. ERP Teamwork and Composition

Often, the Top management support is seen as one of the priority factors in ERP implementation. However, it's indicated in Markus & Tanis' (2000) process-oriented ERP life cycle model that the ERP team work and composition factor is another very important factor which should be called into attention. Nah et al. (2001) rank this factor at the first place of their CSF list.

The ERP team should consist of the best people in the organization (Buckhout et al. 1999; Bingi et al. 1999; Rosario, 2000; Wee, 2000). Building a cross-functional team is also critical. Both business and technical knowledge are essential for success (Bingi et al., 1999; Sumner, 1999). Wee (2000) stressed that the ERP project should be the top and only priority to the ERP team and their workload should be manageable. He also asserted that the team should be co-located together at an assigned location to facilitate working together.

Moreover, the item “Teamwork” should be also interpreted as a mentality like working as part of a group in which there is a shared goal, and different members of the team take on different roles in order to achieve the goal, which the ERP team member should carry through the whole project. In this sense, teamwork mentality is one way to reflect company’s organizational culture. However, in some Chinese companies, this mentality is seldom reflected. Employees are used to accept the work as the assignment from the managers. They are not keen in knowing the reason of doing so. They are not keen either to work together with other team members. They take it for granted that obedience to the management to finish their own job is the rule.

However, in the ERP project, the team members are supposed to be aware of the goal as well as the management. In additional, the team should be familiar with the business functions and products so they know what needs to be done to support major business processes (Rosario, 2000). Otherwise, the conflict will surely happen while they found the assignment from the management is difficult to fulfil.

As stated in the earlier literatures, ERP teamwork and composition is important through the ERP life cycle (Markus & Tanis, 2000), at least in the western business context. Therefore, it will be interesting to see whether the same argument will also apply to the ERP implementation in Chinese companies. Here, I assume that ERP teamwork and composition has a positive impact in ERP implementation in China, as well as in the western countries, such as U.SA or European countries.

Hypothesis 1: Strong ERP Teamwork and composition has a positive impact in ERP implementation in China.

5.3.2. Top management support and Management style

Top management support has been always stressed as one of the CSFs (Bingi et al., 1999; Buckhout et al., 1999; Sumner, 1999; Akkermans & Helden, 2002), and always been at the priority position (Wee, 2000). Gunson et al. (2001) state, “Top management and their CONTINUED involvement, support, commitment, mobilization is vital”. In Ball et al.’s (2001) research paper, it is also stressed that “Stability of the membership of the groups, and clear and constant pressure exerted by them, made a significant difference to the speed and accuracy of implementation” (Ball et al., 2001). The project must receive approval from top management (Bingi et al., 1999; Buckhout et al., 1999; Sumner., 1999) and align with strategic business goals (Sumner, 1999). To implement an ERP system smoothly and successfully, companies require a steering committee to participate the team meetings and monitor the implementation efforts, spend time with people and provide clear directions of the project (Zhang et al., 2002).

While talking about top management in China, it would be odd if not involve the management style. Organizational culture impacts the management style (Hofstede, 1983). Soh et al. (2000) referred to management style as the attitude toward setting a priority for implementing an ERP system. In fact, these different management styles directly affect the approach and duration of implementation (Soh et al., 2000). Besides, Reimers (2002) asserted that concerning the factor of top management, the type of top management participation is most broadly associated with implementation results, rather than the extent of top management participation and support.

Reimers (2002) found that, managers in traditional Chinese companies do not trust the system in terms of data quality and also in terms of appropriateness of suggested decisions. The managers prefer to make the decisions according to their intuition and experience. Thus, managers modify quantities recommended by the system and request alternative sources of information in order to verify the accuracy of data provide by the system (Reimers, 2002).

Specifically, a more ‘modern type’ of management system characterized by majority-based or consensus-based decision making in the steering committee and delegation of decision-making authority to the project team is associated with more satisfactory results whereas a more ‘traditional’ management system characterized by seniority-based decision making in the steering committee and centralized decision making is associated with more negative implementation results (Reimers, 2002).

Therefore, in the research, I assume that the Chinese “traditional” management style has a negative impact in ERP implementation.

Hypothesis 2: Chinese “traditional” management style has a negative impact in ERP implementation.

5.3.3. Business process reengineering (BPR) and Software modifications

It is inevitable that business processes are molded to fit the new system (Bingi et al., 1999). Aligning the business process to the software implementation is critical (Holland et al., 1999). Organizations should be willing to change the business to fit the software with minimal customization (Holland et al., 1999). Additionally, almost every analyst of the ERP experience strongly advises companies to avoid modifying the software (Markus & Tanis et al., 2000). However, adapters very often intend to request the vendors to modify the ERP software instead of reengineering their own business process.

Implementing an ERP system involves reengineering the existing business processes to the best business process standard (Holland et al., 1999; Bingi et al., 1999; Motwani et al., 2002). Nevertheless, companies usually trust and are not willing to give up their own business tradition. They can easily declare that the software simply did not fit business rules around commissions and royalties and that these rules could not be changed without serious negative business implications (Markus & Tanis et al., 2000).

Especially, for those state-owned companies, the organization policies and business traditions can be conventional and inveterate. Therefore, from the company's point of view, it might be easier and safer to modify the software rather than taking the risk to abandon the old business tradition.

Here we see the dilemma between two issues, one is the suggestions from the earlier literatures that do the business process re-engineering (BPR) instead of modifying the software; the other one is the situation in Chinese companies that they always intend to modify the software instead of changing their business processes. Thus, I might as well to propose that to combine the ideas of business process reengineering and software modification at the same time in ERP implementation, due to the specification of Chinese organization culture. I assume that simultaneously combining the business process re-engineering and moderate software modification has a positive impact in the ERP implementation.

Hypothesis 3: Simultaneously combining Business process reengineering and Software modification has a positive impact in ERP implementation in China.

5.3.4. Understanding of ERP system and Having clear business plan and vision

ERP domain knowledge is important for creative development (Legare, 2002). When more is known about the potential of ERP systems in terms of what they can do and what their impacts are, then group members are better able to creatively develop and apply this knowledge within the organizational context (Legare, 2002). With other words, the development and implementation of ERP systems can be improved by acquiring team members with significant depth and breadth of knowledge concerning the potential ERP capabilities and tasks (procedures, processes, and context) (Legare, 2002).

Furthermore, the clear business plan and vision has been commonly accepted as one of the critical success factor to ERP implementation (Akkermans & Helden, 2002; Buckhout et al., 1999). Buckhout et al. (1999) asserted that a clear business plan and vision to steer the direction of the project is needed throughout the ERP life cycle. A business plan that outlines proposed strategic and tangible benefits, resources, costs, risks and timeline is critical (Wee, 2000). This will help keep focus on business benefits (Nah et al., 2001). The success factor of clear vision will translate later into needs requirement, into measures checks and balances control, and a means of calculating a return on investment (Gunson et al., 2001).

However, it is often very difficult to determine them in a clear-cut manner (Akkermans & Helden, 2002). Though companies may have various motivations to apply ERP system, they might not have clear idea what they really want and be able to obtain from employing the ERP system. Therefore, it is critical that the organization first understand ERP system, after that creates a common understanding of what they are aiming to create at what cost and for what benefit (Ball et al., 2001). Companies should analyze and valuate themselves before they start the ERP project, such as the enterprise's strategy, the management models and methods, the organization structure and functions, the business process, the IT status and development planning, the human resource status and development, the organization regulations and execution, the abilities of innovation, and the enterprise's financial capability, etc.

As we can see from the earlier literatures, the factor that having ERP system knowledge and clear business plan and vision has a positive impact in ERP implementation. These two factors can also have the similar positive impact in ERP implementation in China. Therefore, I assume that understanding of ERP system and having clear business plan and vision is essential in ERP implementation in China.

Hypothesis 4: Well understanding of ERP system, as well as having clear business plan and vision is essential in ERP implementation in China.

5.3.5. Personnel resources

The personnel resource has been discussed as one of the factors which impact the success of ERP implementation. However, this issue hasn't got enough prior attention, especially in the environment of China. Lack of such resources often emerges as an important issue (Soh et al., 2000). This problem has been clearly reflected in the later case studies. Individuals in the organization should have domain relevant skills (task knowledge), creativity-relevant skills (cognitive abilities), and task motivation (intrinsic and extrinsic) (Hong & Kim, 2002) in order to achieve the creativity to contribute to the success implementation of ERP system.

In some of the Chinese traditional state-owned companies, lack of personnel resources has become a serious problem in ERP implementation. Most of the employees here, usually aged from 35-55, started their career from the earlier time when China was still in the time of planned economy. They are used to follow traditional Chinese business culture, which is using administrative commands of planned quantities. Either, they have difficulties in the language issue, which leads to the negative attitude to the ERP system eventually. The percentage of this force can already influence the result of the ERP implementation in a negative way.

On the contrary, in the foreign-invested companies, the advantage of the substantial personnel resources is distinguished. The average age of the employees is from 25-35, most of who have at least a college degree. They are more open-minded and capable to accept new knowledge and skills. Obviously, this force will affect the ERP implementation in a positive way.

A typical ERP project requires many internal personnel resources for the project completion (Soh et al., 2000). Specifically in Chinese companies, qualified personnel resources, such as in financial and technique fields, which have good business, technical and language background can be extremely helpful for the ERP implementing procedures. Thus, I assume that sufficient personnel resource is an important factor in ERP implementation in China.

Hypothesis 5: Sufficient personnel resource is an important factor in ERP implementation in China.

5.3.6. Sufficient education and training.

User training should be emphasized, with heavy investment in training and re-skilling of developers in software design and methodology (Sumner, 1999). However, education and training are frequently underestimated and are given less time due to schedule pressures, and less understanding of cross-functional business process is often reported. The author found in the studies that some of the managers are not totally aware what exactly ERP is, what it can bring and how to do it. More seriously, some of the managers might not even realize the high costs, risks, and the relevant changes and conflicts to implement the ERP system. This causes the incapable support from the management.

Meanwhile, the employees do not get enough education of ERP implementation, including the system, the possible changes, the conflicts and the results, all the relative issues. This can lead to a negative attitude to the ERP system, as well as the panic to the potential changes or conflicts during the implementation.

Training has become one part of the organizational culture in Chinese companies. Companies have realized the importance and necessity of the training and education. ERP is still a new thing in China. It is important for the companies to get familiar with ERP system through the relative education and training. Sufficient education and training will help Chinese companies understand the benefits, risks, implementing process of applying an ERP system in a long term, therefore enables the success of the ERP implementation. Thus, I assume that sufficient education and training has positive impact in ERP implementation in China.

Hypothesis 6: Sufficient education and training has positive impact in ERP implementation in China.

III. EMPIRICAL RESEARCH

6. ERP Vendors in China

6.1. ERP Market Share in China

The pie chart below (See Figure 6.1) describes the ERP market partition in China in 1998 (Zhang et al., 2002). It shows that foreign ERP vendors took up more than 90 percent of the share. And at that moment, only Kingdee (2.3%) and UFsoft (2%) were domestic vendors. No wonder, SAP, Oracle, JDE, QAD, etc were in the domain positions, with total share of 63.7%. Meanwhile, the figure also tells the fierce situation among the western vendors in contending the Chinese market.

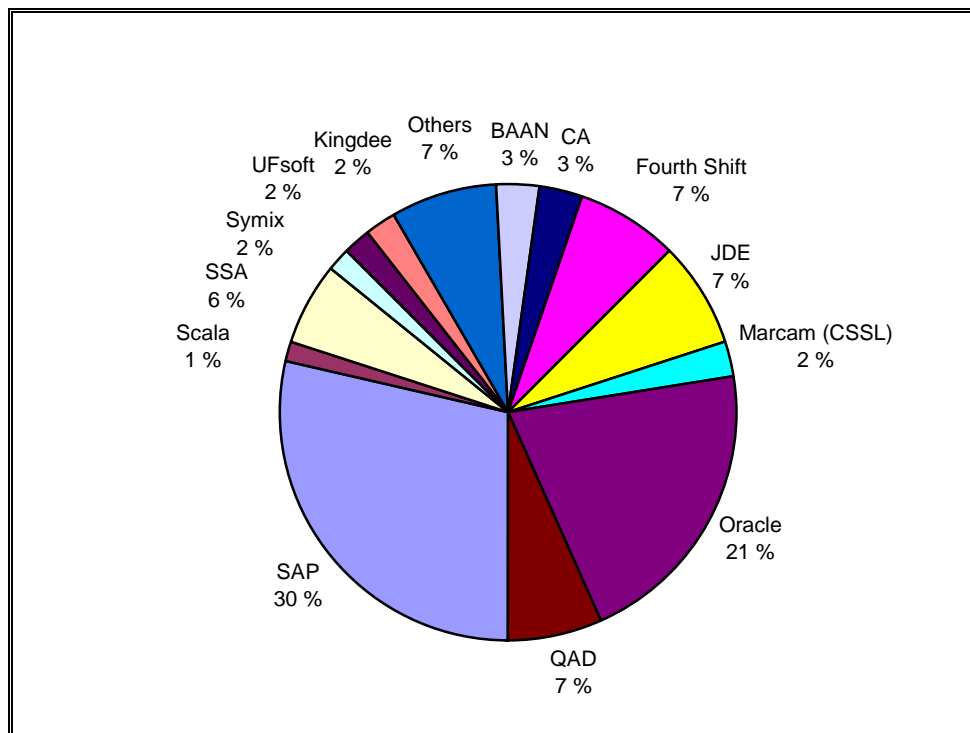


Figure 6.1 ERP market share and major ERP vendors in China (IDC Group 2001)
(Zhang et al., 2002)

Year 2001, the ERP market share in China is as follow (See Figure 6.2) [WEB02]. Obviously, the structure of the Chinese ERP market is quite much different from it was in year 1998. The domestic vendors have been very active and obtained the domain position of the whole market. Instead, the foreign vendors, such as SAP and Oracle, had declined in the share, only have 17% and 8% respectively.

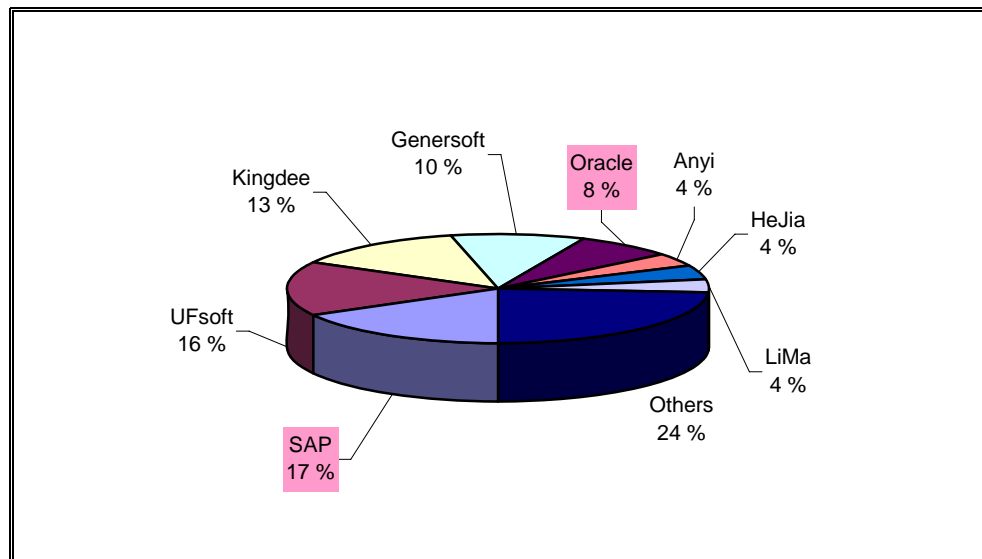


Figure 6.2 Market shares of ERP vendors in China (Genersoft [WEB02])

When it came to the year 2002, it was surprise to found that the SAP and Oracle, ranked in the top eight ERP vendors in China, holding only 24.4% of the Chinese market as compared to their world market share of almost 70%. In contrast, six domestic ERP companies hold a 51.6% share of the market, according to a 2002 China Centre for Information Industry Development Consulting report, more than double that of their foreign competitors (Liang et al., 2004).

6.2. Barriers for Western Vendors

We can see from the figures above that the foreign vendors have difficulties in implementing their massive ERP system in China (Liang et al., 2004). Even the global ERP giants, such as SAP, Oracle, etc, have the same obstacles, especially in promoting the ERP packages in the SMEs market [WEB01].

“You should understand China’s history and its culture before you start doing business with Chinese companies.” The GM of a foreign ERP vendor said (Liang et al., 2004). Indeed, a different culture as the deploying environment can cause totally different result.

Besides, while the ERP market in China has become more and more mature, SMEs have become a very strong stream in the market demand curve. However, like SAP, the global vendors entered Chinese market with the high-end products, which are more recognized by the large-scale companies. As SMEs, their expectations are much more complex and various. It will take time for the western vendors to get familiar with the SMEs market in China.

Seven types of problems were identified by Liang et al. (2004), while talking about why western vendors don’t dominate china’s ERP market. Namely, language problems, report format and content problems, cost control module problems, price problems, business process redesign problems, customer support problems, and consulting partner problems.

According to how big barrier it is, the author has reorganized the order as follow.

6.2.1. Price problems

ERP costs fortune, not only the software package itself, but the implementation and maintenance. The ERP products of global vendors were significantly more expensive than the domestic ones. A SAP or an Oracle application usually cost more than five million RMB ($\approx 500,000$ Euro), while domestic ERP systems cost as little as 700,000

RMB ($\approx 70,000$ Euro) (Liang et al., 2004). Moreover, cost issue is critical for companies carrying on with the whole implementation.

For SMEs, they might even trade off some of the functionalities with the lower price, if the vendor's offer exceeds what they can afford. Therefore, even with their "high-quality" reputation, foreign vendors found difficulties to compete against domestic vendors, especially in the market for SMEs (Liang et al., 2004).

According to a research made by CCW Research [WEB03] (See Figure 6.3, RMB/USD $\approx 8.3/1$), 69% of the users hope that the price of ERP products should be less than 500,000 RMB ($\approx 60,000$ USD). The author won't comment on the feasibility of such expectation, but thus fact indicates the price factor is a big barrier for the western vendors. (Which, on the contrast, this is exactly the advantage for the domestic vendors)

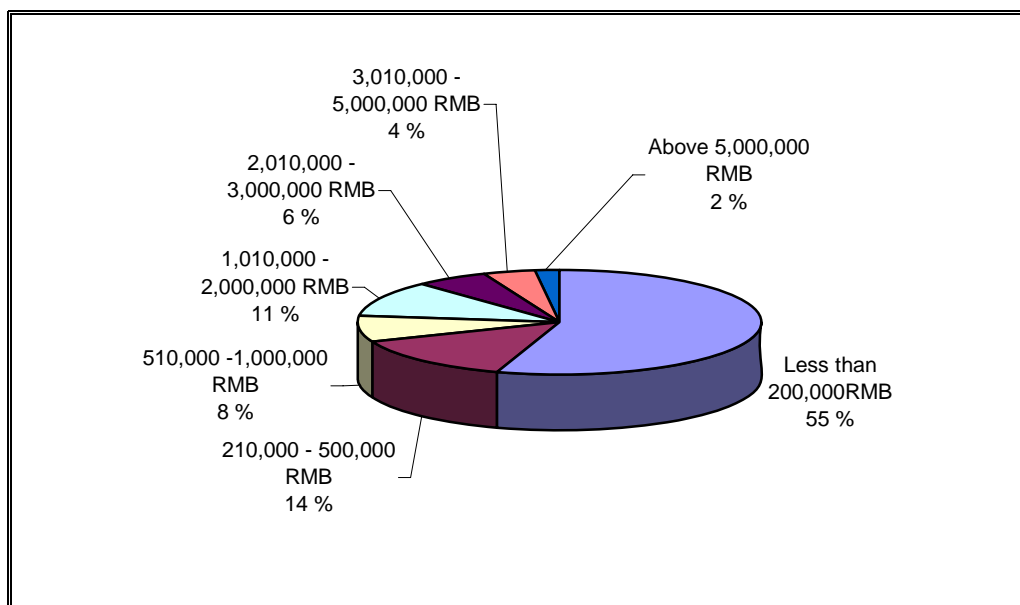


Figure 6.3 Acceptable prices of ERP products in China (CCW Research [WEB03])

6.2.2. Business process diversification

It's often said business in China is driven by personal relationships. However, along with the development of the economy in China, especially after China's entering the WTO, companies have realized and been rapidly adopting rule-based governance

(Liang et al., 2004). The traditional business processes have been challenged. Meanwhile, China's economic reform enforces state-owned enterprises to become market-driven enterprise. New government policies and regulations force continuous changes in companies' business processes (Liang et al., 2004). The foreign vendors might hardly follow the requirement of their Chinese clients of the flexible ERP solutions that respond to business process diversification (Liang et al., 2004).

6.2.3. Consulting companies

The consulting companies are playing very important role in the ERP implementation. The quality of the consulting company influences directly the vendor's reputation and their performance. The consulting companies have to be familiar with the ERP products as well as the technical and services support. However, it's found that the local Chinese consulting companies generally lack familiarity with foreign ERP products (Liang et al., 2004). A certain amount of ERP failure cases was caused by the bad performance of the consulting companies. Thus causes user's discontent, implementation failure, and even lawsuits.

6.2.4. Customer support

The success of the implementation depends also on the vendor's technical support, along with the whole procedure. However, foreign vendors often fail to provide adequate customer support due to the shortage of qualified technical personnel (Liang et al., 2004). Over speed expansion of the market can cause the lack of the technical strength. For instance, SSA, the leading foreign ERP vendor in China in the 1990s, has had many implementation failure cases because of this (Liang et al., 2004).

6.2.5. Language problems

Language problems can be very annoying and frustrating. Chinese language system is totally different from the western one, which uses pictographic symbols instead of an alphabet (Liang et al., 2004). It can be very difficult to translate the ERP system from

English to Chinese accurately and completely. The mixture of using English and Chinese interface can be seriously confusing and frustrating for the Chinese users. It happens often that the information is poor translated, or, the help files are completely in English, which few employees could understand.

6.2.6. Report format and content

The generally accepted accounting and financial standards in China are bit different from the ones used in the foreign ERP system. Therefore, the foreign vendors are required to modify the financial accounting module, both the format and the content, which cost more time and resources (Liang et al., 2004).

6.2.7. Cost control module

In China, the purchasing plans change quite frequently, not as regular as they are in the western countries, due to the frequently floating prices of the materials. Therefore, the cost control module designed for the western style purchasing plan making become inflexible for the Chinese style plan making.

6.3. Chinese Domestic Vendors

While ERP has been hotly discussed, not only the western vendors, also the Chinese local software developers found the opportunity to expand their business.

Apparently, the figures of the market share show us that the software vendors have the tendency of becoming domestic. Indeed, the ERP mentality is getting more popular in China, while the domestic software industry is becoming more mature. During the last 5 years, the software industry has been increasing by 30% annually. Till the end of 2004, the number of the software enterprises has been raised to 9,000 (around 40 of them has gone public). 600,000 personnel are engaged in this industry. [WEB04]

There are several bigger domestic software companies outstanding in the ERP software market, which are superior in aspects of lower price, well understanding of the market, facilitated deployment, lower maintenance cost, etc. Such as UFSOFT, Kingdee, Genersoft etc., who began as financial accounting software vendors, developed to be the major domestic ERP vendors. They intend to contribute to the Chinese ERP business with their understanding of the ERP system, which is merged by the Chinese culture environment. Indeed, there are many successful cases, though are the failed ones.

6.3.1. Advantages of the Domestic Vendors.

In summation, the Chinese domestic software vendors have certain characteristics as follow, which are regarded as the advantages in the competition:

- Low price. Price is no wonder the biggest attraction to the ERP adaptors, especially the small and medium size enterprises. Furthermore, the domestic products' maintenance and update costs are much lower than the foreign ones.
- Familiar with the local market. The domestic vendors have great advantage of better understanding of the local business environment, including the business processes and the users' requirements, which is harder for foreign vendors to realize and understand in a short period of time. Better understanding and communication is critical for the implementation and users' satisfaction.
- More familiar with the local business process and policies. For example, UFSOFT [WEB05] developed their ERP-U860 according to their experience from the SME's sales management, like, customers' credit management. The credit status of Chinese companies is quite different from it in the other countries. U860 offers many different and more complex models for credit management. Again, for instance, the price management. Chinese companies are fond of "price wars", which is not exactly the same in the western world. According to these specialties in Chinese market, U860 was designed to offer more agile solutions in the price management.

- Flexibility and extensionality. The domestic products are able to be more flexible, and extensionable according to the user's demand. For example, ERP-U8 (UFSOFT) is designed so that the user can choose different combination modules according to its implementing phases, whether it is at the earlier phase, medium phase, or the mature phase.
- User friendly. Whether the software is user-friendly or not is very important for the Chinese users. The skill of using the computer is imbalance in China. The developers have to make sure that the users can easily understand and handle the skill, instead of suffering an abstruse computer tribulation. Furthermore, the system should be "role-driven and process-piloted", offering different interface for different management roles in the whole process.
- Specialized in certain fields. The software industry in China is having a positive growing trend. However, compared with the software industry in USA, Japan, or India, it is still under developing. The domestic ERP vendors usually have clear marketing orientation, on which they focus their competition.

6.3.2. Shortages of the Domestic Vendors.

Although, the Chinese ERP market is promising, compared with Japan or India, domestic software companies are still lack of competency in the global market. [WEB04]

The domestic vendors have depended heavily on the domestic demand, which limit their development on the global market. Secondly, most of the vendors focus on developing, or only have the capability, the technical end, instead of the business end, which requires more business experience. As a result, this part of market was captured by the foreign vendors. Thirdly, there are not enough high-quality personnel. Expensive training has become heavy abandons for the companies. Fourthly, because of the historical reasons, most of the companies don't have enough experience in complex process management or quality control of big project; neither do they have the experts who are well versed in the international regulations and experiences. [WEB04]

7. Case Study

7.1. Objective and Sample Selection

The organizational culture impact in ERP implementation has been discussed in the earlier theoretical part. Hereby the empirical research intends to investigate and explore the ERP implementation in Chinese business context, in order to evaluate how the organizational culture affects the ERP implementation practices in China. The research is based on the comparison of the ERP projects deployed in two Chinese companies located in Shanghai, China, one of which is a Chinese state-owned company, and the other is a foreign-invested company. The research was processed by the method of case studies.

Case studies are useful for studying a contemporary phenomenon in a real world context and creating a refined theory (Yin, 1989). Using case study as the research method enables a deeper observation and exploration of the sample companies in order to collect high quality, first-hand data. Case analysis and cross-case analysis have proved to be particularly effective (Holland et al., 1999). Thus, two case studies are examined in order to allow a cross-case comparison.

Company A is a Chinese state-owned company, while Company B is a subsidiary of a global foreign-invested company. These two companies are regarded as the representatives of two organizational cultures from two different business societies, the Chinese culture and the western culture. The author intends to investigate the ERP projects deployed in these two companies in terms of their motivations to adapt the system, the organization and individuals' behavior during the project, the relevant changes and conflicts, etc.

The case studies conducted in this section intend to display the ERP implementation concerns in China, from a vertical point of view, compared with the general researches done in the previous section. The findings intend to offer the clues and foundations for future researches. Furthermore, the discussions and conclusions also

intend to give reference and advices for Chinese companies, or ERP vendors and consultants to improve the ERP implementation results in China.

7.2. Data Collection Methods

Data was collected through the interviews conducted in the July of 2005, in Shanghai, China. The interviews were conducted by the author and the interviewee in person, in the form of dialogues, which were structured following the Interview Questionnaires (See Appendix A). The interviews took one to one and half hours to finish.

The interviewees selected intended to cover a range of possible viewpoints, which include the project manager, the finance manager, and the staffs (common system users) of Company A; CSR (Customer Service Representatives) leader, SBU manager, and SBU staff (common system user) of Company B. As agreed before the interviews, the case studies will be reported without showing the company names, but using Company A, and Company B, instead.

7.3. Framework of the Interview Questionnaire

The questionnaire was composed in both Chinese and English language. The Chinese version was used during the interviews in both companies. The interviews were recorded in Chinese and later translated into English. The questionnaire covers two major parts: the basic information of the sample companies (Question 1-2), and the information of their ERP implementation project (Question 3-16).

The questions are designed on the base of the earlier literatures and the Hypotheses made in Section 5.3, concerning the critical success factors in ERP implementation through the ERP life cycle, which are seen most reflecting the distinctness of the Chinese business context.

Q.8 relates to the Hypothesis 1, ask about “how the ERP team is composed and how the team members work with each other”. Q.8 intends to find out what the ERP team

quality is? Whether the ERP teamwork mentality exists, and how it works? Or if it does not exist, how do the ERP team members work with each others?

Q.7, 13 relate to the Hypothesis 2. Q.7 asks “whether the Top management participates in the whole project implementation, and what the roles they play”, which intend to find out whether there is continues top management support during the whole ERP project, and how it influences the promotion of the project. Q.13 asks “what the management style is, and how it influences the procedure of the ERP project”, which actually intend to find out whether the Chinese “traditional” management style has impact in ERP implementation, and what kind of impact it gives.

Q.10, 11 relate to the Hypothesis 3. Q.10 asks “whether the ERP software is modified”, which intend to find out why the company intend to modify the ERP software, in which way, and what the result is. Q.11 asks “whether the business process is re-designed”, which intend to find out how the company reacts while they are asked to change their business processes because they need to adapt into the new ERP system.

Q.4, 9 relate to the Hypothesis 4. Q.4 asks “what are the motivations for the company to apply the ERP system”, which intend to find out whether company has clear business plan and vision in the ERP implementation. Q.9 asks “do the managers and employees know about the ERP system and ERP implementation”, which intend to find out whether good understanding of the ERP system will help the company implement the ERP system smoothly.

Q.12 relates to the Hypothesis 5, asks “how is personnel resources situation in the ERP project”. Q.12 intends to find out that whether personnel resource factor has great impact in the ERP implementation, whether good personnel resource will help the ERP implementation in a positive way.

Q.14 relates to the Hypothesis 6, asks “when the training program happens, what the program covers and how the trainees’ attitudes to it”. Q.14 intends to find out that how important the training is in the ERP implementation, and what the attitude the trainees have towards program.

7.4. The Structure of the Case Studies

The case study is composed by three parts. The first part of case study contains the interview reports of Company A and Company B, which cover the companies' general information, including organization background, organization structure, decision making style, etc.; and as well as their ERP implementation project procedures. In the second part of case study, the author builds a table that lists the findings from the interviews, which illustrates the comparison and cross-studies between these two companies. At the end, conclusions are summarized and suggestions are made for the future research.

7.5. Case I – A Chinese State-owned Company’s ERP Endeavour

7.5.1. Company Background

Sample Company A is a traditional Chinese state-owned company that deals mainly in textile product import and export business, as well as in other products. The sales reached USD 4 billion and the revenue reached USD 11 million in 2004. Company A is regarded as one of the biggest companies in China within the textile industry. Its major business operation is the import and export transactions, which based on the circulation of the documents, such as commercial invoice, packing list, import & export permission certification, warehousing requisition, letter of credit, bank receipt, draft, bill, etc.

7.5.2. Company A’s ERP System Implementation

Company A started their ERP project in June, 2003. Through the procedure of choosing, discussing, comparing, doing feasibility analyses, Company A chose a Chinese domestic ERP software package, YouQiang Trading Operating System, which is specialized in import and export business solutions. In March of 2004, the financial module was officially launched. Meanwhile, the old financial system continuously worked until the new module gradually got on the right track. In the end of 2004, the operating modules were applied while the financial module was stabilized.

While asked that, why they chose the ERP software that is in use presently, the project manager said, the software package they are using, YouQiang Trading Operating System, is very cheap, compared with the SAP products that they consulted at the beginning. In addition, the price included also the software re-design, applying, and maintenance. Before hands, they also consulted some of the partner companies that have similar operation system, which found YouQiang Trading Operating System is a suitable software package for the import and export business operation. Besides, another reason YouQiang is chosen, said the project manager, is that the software vendor agreed to do the software re-design according to their requirements.

While asked that what the problems company had before applying the ERP system and what was the motivation to implement the ERP system, the project manager said that, all along, company emphasizes from the management aspect that the quality of the data is crucial for the company's operation and development. They used to have an operating system, named "Info" system, working together with a separate financial information system located in the finance department, to manage the whole operating practices inside the company. The data was manually input into the financial information system by the financial department staffs.

But this operating system slowly reflected its shortage in management efficiency. It was difficult for managers to control business risks taken because of the low quality of the data when input procedure was barely assured. The finance manager, also the project controller, stated that, before the ERP system was introduced, the numbers shown on the commercial invoices often had discrepancies with the number in the "Info" system. The system is not rigorous. The human factor could influence the data input. The managers also had problems in getting the accurate sales reports from the system. Several "bad debt" cases have occurred because of the insufficient business controlling and monitoring. Therefore, company intends to use the new ERP system to improve the management performance, in order to control the business risks consequently.

The ERP project team consisted by the General Manager as the Project Leader, the financial manager as the Project Controller, IT manager as the "Info" Model Controller, IT vice-manager as the Project Manager, and the Vendor Consultant. In addition, the business managers give suggestions and feedbacks concerning the project promoting and developing. "The GM was the leading figure," the project manager introduced, "and the Project Controller was the driving force in the project." And the project manager himself was the assistant of the Controller. Since company still had the legacy "Info" system at that moment, the IT manager was responsible for the legacy system until the ERP system finally implemented. The vendor consultant didn't play very important role in the project. They just worked as the technical forces in the project, which took care of the software re-design and installation.

Before the project starts, the IT department was expanding from two into ten, who focus on the ERP project. In addition, the IT department was separated from the earlier

administration office to currently separate IT department. On the other hand, the finance department transferred the operating units from function-driven into business department-driven. The personnel's responsibility has widened over the department boundaries.

One aspect has to be brought into attention in this case is that the software vendor was required to redesign the software following as much as possible the existing business processes of Company A. The General Manager of the company, who is the chief overseer of the project, insisted that the current business processes has to be kept, and the newly applied ERP system has to come close to it, but not the other way around. Hereby, we could clearly see that the company has very strong confidence in the business concept so that they are not willing to abandon the whole business procedure because of the system. With other words, company still regard the ERP system as an information tool, rather than a business solution.

The promotion of the project hasn't gone so smooth. The negative air was strong at the beginning of the project. The project manager said that he found great difficulties in persuading the senior business managers to accept the ideas of applying a new ERP system. The business managers simply didn't want to invite new troubles into their own busy work, no matter how the project manager tried to explain them the benefit of the ERP system. Even the good background in accounting and information system didn't help the project manager to promote the project. The business managers either rejected the new system, or they tried to avoid or postpone the discussion concerning this issue. Until the senior finance manger was assigned as the project controller, the project was finally started to make way. The project manager stated that, another reason that the project suddenly became smooth was that, the finance department was a very important department for the business departments. Compared with the IT department, the financial department has definitely more powful influences in the sense of controlling.

One other issue should be called into attention is that, while the project manager was asked what the reason is that finally made the project successfully moving? He said that it was mostly the General Manager's personal prestige inside the company has pushed the project forward. He said that, the GM always has a sharp sense of the information system construction. While the previous system of management no longer satisfied the

company's development, she decided to apply the ERP system in order to improve the management performance. And she has been attending all the ERP concerning activities, including the choice of the software, the decision making, the committee meeting, and etc. In addition, a big part of the employees have been working in the company for a long time, with the same general manager. Most of them are working now as the middle or high level managers. Therefore, the relationship between the managers and the GM is solid, which enabled the managers trust the GM during the ERP implementation.

Company A regarded training of the employees an important part of the process. The training program is composed by two parts. The first group is aimed to the older employees, who have been working in the company for a longer time. This section of employees has various levels of English and computer knowledge. The training was hereby focused on the practical operations of the new ERP system. The second group is the newly recruited employees, who usually are newly graduated degree students with good academic background. For them, the training concentrated in brief introduction of the company's business process, the ERP system knowledge, as well as other practical issues.

The effect of the implementation has so far been acceptable, according to the Finance manager and the Project manager. After launching the ERP system, feedbacks from the different management levels, especially the finance department show a positive outcome. However, while one of the common system users was asked how she thought of the new system, she replied that the system was so complex to use, and it always caused a lot extra work. She didn't understand why they had to use this new complex system. She often has overtime work nowadays.

7.6. Case II – A Foreign-Invested Company’s ERP Journey

7.6.1. Company Background

Sample Company B is a foreign invested subsidiary of a globally operating company. They deal mainly with the import of the chemical materials to China. Company B’s business operation is based on SBU (Strategic Business Units). Each SBU has certain level of decision making concerning business development, including the decision to apply an ERP system. According to the business request, its profit, the cost, and return of the investment, SBU will decide whether they will and when to apply the ERP system, introduced by the manager from one of the SBUs. It usually takes 2-4 years for SBUs to launch the whole ERP system in the SBU domain, varies with the scale and requirements of the different SBU respectively. However, to fully implement ERP system in the company is based on the global strategies of the Company B’s mother company. All of its global subsidiaries will run within an integrated network domain consequently.

7.6.2. Company B’s ERP System Implementation

Company B has been using IBM’s MOS (Multiple Order System) as their daily operating software. MOS system worked in each SBU as a unit, instead of being a globally integrated network. Therefore, it was not available for an SBU to reach the data, such as inventory, lead time, etc, among the global scope. Along with the globalizing development of Company B, according to the CSR leader, the ERP system has become one of the best solutions to solve this problem. So far, there have been four SBUs applied ERP system in order to improve the work efficiency.

The ERP product applied in those SBUs was SAP’s Order Fulfilment Module. The request of using an ERP system was made by the subsidiary to the mother company. After the request has been approved, the SBU’s needs were analyzed. The ERP system would be tested and adjusted base on the SBU’s specific situation, before it was officially launched. SAP offered the company an integrated platform in sales/purchase

ordering, invoicing, delivering and batch allocating, message sending, etc. functions, which MOS system cannot fulfil.

Since the ERP system has been applied by the SBU unit, the project team will mainly be composed by the SBU staffs. Meanwhile, the regional manager will supervise the project, as well as the staffs from the IS department, and the ERP consultant, etc. The team members have been given a clear target of the project. Additionally, there are plenty of available resources supporting the project, such as personnel resource, financial support, hardware resource, etc. The CSR leader is very confident and proud of their personnel resources. She said that, "We have very good personnel resources. Our employees usually have at least university degree background, which means the English and computer will not become obstacles at all. Furthermore, we have also plenty of personnel with good business and technical background."

While the SBU manager was asked, what is the reason that the project could be smoothly promoted, besides the sufficient resources mentioned above, he specifically emphasized the teamwork mentality inside the company. He said that, "People here work together as a team. Everybody is clear with their own responsibility. We have the same target to work to. Everybody keeps the time schedule, so that the work is done in time. This teamwork mentality is a strong driving force in the ERP project."

As the adapting SBU, they were not allowed to modify the ERP system. Instead, they had to follow the system logic to adjust their process of the transactions. Since the analysis and testing was done before the ERP project start, the SBU's business requests and whole global business strategy was taken into consideration by the project design team. Nevertheless, the SBU still has to adapt into the new system. The interviewed SBU staff said, "It took some time before we learned to use the system. And it takes a little bit more time to input one transaction record than before. The work load has increased. But we are all trying to manage it." As stated by the SBU manager, negative attitude was seldom found in the SBUs.

The promotion of the project went relatively smooth. As mentioned above, the employees had a positive attitude towards the ERP project. Most of the adapting SBU staffs have had training concerning the ERP system in advance. They are usually more

excited to get involved into the new project rather than being frightened by it, described by the SBU manager. The interviewed staff said, “I think using the new ERP system is a good opportunity to improve my knowledge and skill, because it is very advanced, even in the world.”

Training is also arranged before and after the system is launched. During this period of training, the system is thoroughly introduced, areas as the business modules, net work, and the operation practices, etc. The focus is usually on the daily practical operation of the system, as for example, how to input data, or how to import the needed information from the system, etc. The trainers usually hold an active and eager attitude towards the training. The interviewed staff said, “It is good that I have opportunity to take part in all kinds of trainings.” As mentioned above, they see it more as an opportunity to increase their own working value, than seeing it as a waste. Again, she said “This is also a bonus in working in the foreign company.” Thus positive attitude influences the result of the training. In addition, the staffs usually have good education background and high learning abilities to accept and handle new information and skills.

The managers have been satisfied with the new system so far. The system has been working as planned. The general feedback of the implementation results is positive. The daily operation work has become more efficient. The data is more accurate and easier to reach from other organizations within the same network.

7.7. Cross Study

In this part, the author will summarize the earlier stated case reports into the following form (See Figure 7.1), in order to offer a more concise comparison between the two companies' ERP project implementation. In the following chapter, the hypotheses will be applied to the findings from the cases.

Figure 7.1 Cross Case Study (Page 1 of 2)

	Company A	Company B
Ownership characteristics	State-own company (SOC)	Foreign-invested company (FIC)
Main business	Textile products import/export business	Raw material import/export business
2004 Revenues	\$4.0 billion	\$27.3 billion
Daily languages used	Chinese Madarin, English	English, Chinese Madarin
Mainly business procedure organization (Unit)	Business departments	SBUs (Strategic Business Units)
Motivation to apply ERP system	<ol style="list-style-type: none"> 1) Business risk controlling 2) Data integrating 3) Improve the managment performance 	<ol style="list-style-type: none"> 1) Mother company's global strategy 2) The old system is no longer enough for the business development 3) Data integrating in global domain
ERP software	YouQiang Trade Operating System (Chinese domestic product)	SAP Order Fulfillment System
How to choose the ERP product	<ol style="list-style-type: none"> 1) Much cheaper than the other similar products 2) Suitable for company's business requirements 3) Vendor agreed to modify the software according to company's requests 	Decided by the mother company
Person who propose to apply the system	General Manager	SBU
Top management support - GM/CEO's activities	<ol style="list-style-type: none"> 1) Proposed the ERP project 2) Taking part and making decisions in all the procedures 3) Supervising the implementing work 	<ol style="list-style-type: none"> 1) Taking part in the pre-phase test and design of the project 2) Making decisions and supervising the implementing work
The project team consisted	<ol style="list-style-type: none"> 1) General Manager - team leader 2) Financial manager - project controller 3) IT manager - ISO module controller 4) IT vice-manager - project manager 5) Software vendor - consultant 6) Department managers - participators 	<ol style="list-style-type: none"> 1) Region managers - supervisors 2) SBU staffs - executives and key users 3) IS staffs - technical support 4) Vendor - consultant
The old system VS. the new ERP system	<ol style="list-style-type: none"> 1) ISO QCsystem (Info system) VS. YouQiang Trade Operating system 2) New system automates and integrates an organiaiton's business processes 3) Enables sharing common data and practices across the entire enterprise 4) Producing and accessing information in a real-time environment 5) Enable the higher-quality management and business risk control 6) Old system - difficult to follow the transaction, inaccurate and fragmental data 	<ol style="list-style-type: none"> 1) IBM MOS (Multiple Order System) system VS. SAP Order Fulfillment System 2) New system offers an integrated platform for sales/purchasing ordering, invoicing, delivering, allocating - globalwise 3) Enables sharing common data and practices across the global offices 4) Producing and accessing information in a real-time environment 5) Old system - incapable to apply integrated data, contains imprecise transaction data
Software modification or Business process re-engineering	Modifying the software according to company's requests	<ol style="list-style-type: none"> 1) The system has been tested and adjusted by the mother company 2) Adapting SBU redesigns the business process to adapt to the new system
Human resource and Hardware capabilities	<ol style="list-style-type: none"> 1) The IT department has been expanded from two to ten. The function is also transformed from just daily maintenance into ERP project focus 2) Otherwise, the key users have various levels of skills or knowledge in operating the computer and to the ERP system 3) Investment has been put into the hardware construction, including new servers and computers 	<ol style="list-style-type: none"> 1) Company has strong backup of highly qualified personnels, which is a key factor in the project 2) Abundant hardware supply ensures the project proceeding smoothly

Figure 7.1 Cross Case Study (Page 2 of 2)

Team work	<ol style="list-style-type: none"> 1) Difficult to start the project. Existed strong phenomenon of priority of seniority 2) No apparent indication of team work mentality 	<ol style="list-style-type: none"> 1) Vigorous team work spirit 2) All the possible resources are gathered to support the project
Changes occurred during the project	<ol style="list-style-type: none"> 1) The company's IT strength and function has been expanded 2) Very big change is the responsibility of the staffs in the Finance department has been changed 3) The common users have new troubles in using the new system, more time-consuming 4) The management and controlling become more efficient 5) There is not as many positive feedbacks from the business departments than they are from the management departments 	<ol style="list-style-type: none"> 1) The SBUs became parts of the global ERP network. Share of the real-time information with other global offices become real 2) More accurate data 3) Improve the quality of valuation the employees' performance 4) So far the SBUs' business processes have been following the western standard. The new system hasn't caused too much panic or too big difference. All the key issues have been taken care of in advance
Training	<ol style="list-style-type: none"> 1) The training program includes two sets - the training for the older employees and the training to the new recruited ones. 2) The first part focuses on the operating practices 3) The second part also includes the basic knowledge of the ERP system, the practices of the foreign trade business, and the company's business processes 4) The younger employees have relatively active attitude towards the training 	<ol style="list-style-type: none"> 1) Training is one big and important part of the company's organizational culture 2) ERP training is arranged both before and after the system's launching. Earlier training covers the introduction of the business modules, net work, operation practices, etc. The later training focused on the practical issues 3) The trainers usually have positive and active mentalities towards the training, even they have to still finish the daily work after the training
Companies' mentality towards the ERP project	Using the software product as a essential framework, fill in the own business concept. Regards the ERP as an IT tool to improve the company's management	To apply the ERP system is one part of the mother company's global strategy.
Managers' and Personnels' attitude towards the ERP project	<ol style="list-style-type: none"> 1) Doubting about the system at the beginning, refused to cooperate 2) Barely accepted as the top management's decision 3) Complained about the overwork load, regard as unnecessary change 4) Still preferred to the old system, care little of improving the management quality 	<ol style="list-style-type: none"> 1) Mostly is active and positive attitude 2) Clear of own responsibilities 3) Willing to overwork to finish the preparation on time 4) Strong team work spirit 5) Willing to accept and learn new things, open-minded, good education background, qualified for the job
Vendor support	Little support needed, except the software re-designed period	Little support needed. The company has own personnels to take care of the implementing issues and IT supports. Get help from the other region adapting SBUs' experience.
User's satisfaction	<ol style="list-style-type: none"> 1) Management is more satisfied with the system. 2) Common users don't give too positive feedbacks. More complains 	<ol style="list-style-type: none"> 1) Management is satisfied with the system 2) But some functions haven't been utilitted 3) Key users have got used to the system
Organizational culture	<p>Keeping the characteristics from the state-own company</p> <ol style="list-style-type: none"> 1) Organizational structure 2) Decision making style 3) The seniority works on the staffs so that they accept to try the new system 	<p>Following the western standard</p> <ol style="list-style-type: none"> 1) Organizational structure 2) Decision making style 3) The pressure of loosing the job drives the staffs to improve their working value and competence

7.8. Findings and Discussion

7.8.1. ERP Teamwork and composition

As mentioned in section 5.3.1, in the real case of Company A, the teamwork mentality was hardly found in the ERP implementation project. The western point of view of teamwork is differently understood in a Chinese state-owned company. People have different ways to solve problems rising from team work. Employees are used to accept work as the assignment from the managers, with relatively low motivation of working as a member of a team. They are not keen in knowing the reason of doing so. They take it for granted that do as long as the manager tells. As result, conflicts happen while the employees find that the assignment from the management is difficult to fulfil.

On the contrary, the teamwork context is apparently reflected in Company B. The ERP team members are clearly working towards the same target, and every one of them is following the time schedule. The team members are also willing to help other members if it's needed. It is discussed here that the teamwork context has penetrated into Company B as one of the western organizational culture. Consequently, the ERP project was smoothly promoted in Company B.

As assumed in *Hypothesis 1*: Strong teamwork mentality and composition has a positive impact in ERP implementation in China, the findings from the Company B's case show the same results. The findings suggest that working with a teamwork mentality might be also encouraged in Chinese traditional state-owned companies during the ERP implementation as well, in order to ease the implementing procedure. One positive tendency is that, varies with China's development, more and more western management concepts and solutions are introduced to China. The traditional business working environment is slowly changed, or emerged with the Western business context. The teamwork mentality might consequently become one of the Chinese organizational cultures in the future.

7.8.2. Top management support and Management style

It is discussed in section 5.3.2 that the top management support has always proved to be one of the key factors, which gives a positive impact in ERP implementation. The same phenomenon can also be found in my case studies that, the support and the attendance from the top management give a positive impact in ERP implementation within both companies. No matter if is in the state-owned company, or the foreign-invested company, top management support seems to be one of the essential issues to ensure the ERP projects to be successful, in terms of designing and controlling the whole implementing process. In addition, the attendance of the top management during the ERP implementation could also strength the employees' confidence in the whole project.

However, I found opposite results as discussed in section 5.3.2 that the Chinese "traditional" management style has negative impact in the ERP implementation. I found that "seniority-based" management style has actually pushed forwards the procedure of the ERP project. I found that at the beginning, the project was difficult to start because the project manager was at the relatively junior position; even he has a good education background both in accounting and technology. The business managers didn't take him seriously. Until the senior finance manager was authorized as the project controller, the situation changed. The reason can be analyzed that the finance manager is at a senior position in the company. Employees in the state-owned company are used to be driven by the "seniority-priority" rule. At the end, the business managers accepted to apply the new system.

The findings in Company A's case imply the opposite results as it was assumed in the *Hypothesis 2*: Chinese "traditional" management style has a negative impact in ERP implementation, that the "seniority-based" management style has promoted the ERP implementing procedures. However, as China is promptly developing, the Chinese business society is evolved as well. The Chinese state-owned companies cannot avoid the changes either. As a result, the "traditional" "seniority-priority" management style would slowly disappear while the elder generations of managers get retired, or either being taken place by the "modern type" (Reimer, 2002) of management system, which is characterized by "majority-based" or "consensus-based" management style, brought by the younger generation of managers.

7.8.3. Business process reengineering (BPR) and Software modifications.

As discussed in section 5.3.3, very often the adapters intend to request the vendors to modify the ERP software engineering instead of modifying their own business process. It is found in Company A that the software vendor was required to redesign the software by following the existing business processes maximally. It is insisted by the GM in Company A's case that the business process has to be kept as unchanged as possible, since the previous business process is proven to be suitable for company's business operations. In addition, the company has a certain kind of governmental benefit, which has to be kept in the operation as well. Meanwhile, the company has done some internal adjustment as well. For instance it's found that the finance department transferred the operating units from the function-driven into the business department-driven. Thus, the personnel's responsibilities have widened over the department boundaries, which enable more efficient monitoring and controlling of the business risk. Consequently, it is found that the tailor-designed ERP software eased the company to adapt into the new operating system. The possible conflict caused by using the new ERP system has been minimized.

The software modification was not found in Company B's case apparently, neither the business process re-engineering. It looks like that the adapting SBU starts with the ready-made ERP system from the beginning. However, all the testing and adjustment has actually already been conducted in advance. On the other side, it is found that the business processes have been readjusted according to the request of the ERP system during the ERP implementation. However, since Company B is a foreign invested subsidiary, it has been following the business strategy from the mother company, which reflects the western business mentality. With other words, the business process in Company B is actually close to the mentality reflected in the western-designed ERP system. That's the reason that the business process re-engineering is not found to be apparent.

The findings show that business process reengineering and software modification factors exist simultaneously in the two cases, which seem to be a positively suitable solution for both Company A and B. The findings imply the same result as assumed in the *Hypothesis 3*: Business process reengineering and Software modification considered simultaneously has a positive impact in ERP implementation in China. Such comprise happens while there is the conflict between the new Western business conceptions and Chinese business society. The Chinese business society welcomes new, advanced conceptions or solutions; however they also have to be suitable for the Chinese context.

7.8.4. Understanding of ERP system and Having clear business plan and vision.

A good understanding of ERP is found to be essential to enable the companies to implement ERP system smoothly in both cases. In Company A, one of the reasons that it was difficult to accelerate the ERP project at the beginning is that the business managers' negative attitudes. Such attitudes are from the panics caused by lack of the knowledge of ERP system. Or, such attitudes are from the one-sided information that ERP system costs a lot and contains high risks, which formed the negative attitude in the company.

In Company B, the adapting SBU usually has prophase training of ERP system and implementing procedures before they decide to use the system. Such prophase training enables the SBU leader and the staffs to get warming up with the implementation. Thus the ERP implementation was relatively smooth in Company B.

Both companies are found to have clear business plan and vision. In Company A, the old system was no longer enough to control the business risks. Therefore, Company A intended to use the ERP system to improve the management performance. Company B intended to use ERP system to improve their working efficiency. The former system was not able to integrate the data global-wide. The new ERP system was expected to offer more integrated and on-time information for company's business. It's found in the

case studies that a clear business plan and vision helps the companies to process the ERP implementation.

The findings imply the same results as assumed in *Hypothesis 4*: Well understanding ERP system, as well as having clear business plan and vision are essential issues in ERP implementation in China.

7.8.5. Personnel resources.

As discussed in section 5.3.5, lack of personnel resources has become a serious problem in ERP implementation in some of the traditional Chinese state-owned companies, which is actually found in Company A's case.

It's found that in Company A, almost 50 percent of the employees are aged over 40, among who are at the senior position holders of the management. They are from the time when China was still implementing the planned economy period. Most of them have abundance background and knowledge relative to the textile products, which is regarded very important for the business development. However, their language and computer skills are somewhat limited. Furthermore, their interests and enthusiasms in learning new technique and languages are not that high. Apparently, their attitudes towards the new ERP system are not too anxious. Though among the rest of the employees, the younger generation has better language and computer skills, they are not at the senior positions that could have great influences on the ERP implementation. However, it's found that in the business departments, where the employees have better language and computer skills, have relatively better performance during the ERP implementation. The findings also show that the strengthening of the personnel resource in the IT department is crucial during the ERP implementation in Company A as well.

Most of the employees in Company B are aged between 25 and 35, who have at least university education background and are familiar with the computer, which also includes the senior managers. During the interviews, the employees from Company B show apparently positive attitudes to the ERP system compared with the ones in

Company A. They are eager to learn and accept new things, because of their ability and wills to learn. Besides, the employees in the functional departments also show strong ability to support the ERP implementation, such as the IT department and the finance department, etc. The good personnel resource forms a positive force in the ERP implementation, which enable the project to move forward smoothly.

In these two Cases, I found outstanding results, which is same as it was assumed in *Hypothesis 5*: Sufficient personnel resource is an important factor in ERP implementation in China. As stated earlier, a typical ERP project requires many internal personnel resources for the project completion (Soh et al., 2000). Qualified personnel are an essential and also very valuable support for the success of the ERP implementation. The findings from the cases suggest that the companies in China could not overlook the importance of the personnel resources while implementing an ERP system.

7.8.6. Sufficient education and training.

Education and training activities are found within both of the companies, as one aspect of the organizational cultures, only taking place by different ways and in different time frames. The findings are same as in the *Hypothesis 6*: Sufficient education and training has positive impact in ERP implementation in China. Both of the companies realize the importance of the education and training in order to enable the ERP implementation going forward, for instance, the most simple example is that the training teaches the users how to operate with the new system. The extensive education and training of the ERP knowledge and know-how has also positive influences to the ERP implementation in the long term run. The findings in the cases indicate that the sufficient education and training impact the ERP implementation in a positive way.

7.9. Conclusions and Suggestions.

7.9.1. Conclusions and Limitation

As mentioned at the beginning, the Chinese business society has a unique characteristic that is different from the western business context. Therefore in this paper, the author intends to explore how Chinese company's implementation of the ERP system is different from the company which runs in the western business context. Six hypotheses have been made, which covers the critical factors in ERP implementation that are considered mostly reflecting the distinctness of Chinese context. The hypotheses are displayed as follow:

Hypothesis 1: Strong ERP Teamwork and composition has positive impact in ERP implementation in China.

Hypothesis 2: Chinese "traditional" management style has negative impact in ERP implementation.

Hypothesis 3: Simultaneously combining Business process reengineering and Software modification has positive impact in ERP implementation in China.

Hypothesis 4: Well understanding of ERP system, as well as having clear business plan and vision is essential in ERP implementation in China.

Hypothesis 5: Sufficient personnel resource is an important factor in ERP implementation in China.

Hypothesis 6: Sufficient education and training has positive impact in ERP implementation in China.

It is found in the case studies that teamwork mentality should be encouraged in the ERP implementation in China, especially in state-owned companies where employees are not used to work in teamwork environment, since teamwork is definitely a value integral to the success of ERP implementation. It was discussed earlier that a more 'traditional' management system, which is typical in the Chinese state-owned companies, characterized by seniority-based decision making through the steering committee and centralized decision making, is associated with more negative implementation results (Reimers, 2002). However, it is found in the case study that seniority-based

management style actually has positive impact in ERP implementation in some cases. It's also found that business process re-engineering and software modification should be considered simultaneously in ERP implementation in Chinese companies. Furthermore, the findings also imply that a good understanding of ERP system, having a clear business plan, sufficient personnel resources, as well as education and training are all essential and important in ERP implementation in China.

However, due to the small sample size in the case study, there are limitations in the generalizations of the research results. Quantitative surveys are necessary for the future research in order to get more general results.

7.9.2. Suggestions

All in all, while talking about successfully implement ERP system in China, technology alone cannot help you reach your business goals. Chinese organizational culture has to be considered. The western ERP vendors should get to know more about the Chinese organizational cultures and business traditions, in order to efficiently localize their ERP products in China.

For the companies in China, understanding their own organization characteristics and getting more familiar with ERP system both should be emphasized. Due to the findings from the case studies, the follow issues should be called attention during the ERP implementation.

- The teamwork mentality should be encouraged in Chinese company during the ERP implementation. ERP implementation is a large, complex and diverse task. No single person can accomplish this. The piece-by-piece, component-by-component approach requires a significant interdependency. The teamwork by all organizations is the key to achieve the on-time under-budget completion of ERP implementation.

- Before the company decide to apply ERP system, it's suggested that the managers and the employees should receive ERP-concerned education, which enables them to realize what ERP is, what ERP could achieve (both benefits and risks), and what significant changes ERP will bring, etc. Having this knowledge and before-hand education is one of the essential issues that enable the ERP system being smoothly carried on.
- Personnel resource is one of the most important resources for the company's development, specifically in the ERP implementation. However, it is found that lack of the personnel resource has become one of the most serious problems for the Chinese companies. Companies should put efforts in collecting and training qualified managers and employees in both term of technical and business.
- The unique Chinese organizational culture and business tradition will never extinct, but just slowly merge into the environment of the business globalization. It is necessary to find the balance between the Chinese business context and western ones. Therefore, business process reengineering and software modification should be considered simultaneously in ERP implementation in Chinese companies.

7.9.3. Future Research

Due to the limitation of the sample size, quantitative surveys are necessary for the future research in order to get more general results. In addition, other critical success factors in ERP implementation should also be studied and researched in the Chinese business context, such as, project management, change management, effective communication, vendor support, user involvement, etc.

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[WEB04] Chinese Human Resource Network: <http://www.chinahrd.net>

[WEB05] UFSOFT: <http://www.ufsoft.com.cn>

APPENDIX

APPENDIX A: Interview Questionnaire

DATE:

COMPANY:

INTERVIEWEE:

QUESTIONS

1. Basic information of the company.

Chinese State-owned company Foreign-invested company

Industry: _____

Revenue: _____

Daily business: _____

2. What are the problems exist in the company's operation, so that the company decides to use ERP system?

3. Information about the ERP project procedure.

Starting time: _____

Ending time: _____

Status: _____

Future plan: _____

4. Motivation to apply the ERP system.

- Improve management performance
- Improve working efficiency
- Improve business performance
- Initial control in the company
- Other companies are using the ERP system
- Others:

5. Which ERP software is company using now and why chose this one?

- Foreign brand : _____
- Local brand: _____

6. Who suggests applying the ERP system?

- CEO
- CFO
- CIO
- Others:

7. Does the top management take part in the project through the whole implementation?

8. How is the ERP project team consisted? Which roles are the members playing, and how important? How do the team members work with each other?

9. How well the managers and employees know about the ERP system and ERP implementation? Are these information covered in the training program?

10. Has the ERP software been modified? Why? And how?

11. Have the business processes been re-designed? If so, in which aspects?

12. How about the personnel resource capacity in the company? Is it sufficient to support the ERP implementation?

13. What's the management style in the company? How does it influence the procedure of the ERP system implementation?

14. When do the training programs happen in the ERP project? What does the training program contain? What are the trainees' attitudes towards the program?

15. How is the users' satisfaction of the new ERP system? From the aspects of management view and the normal users' view.

16. What do you think are the most important/critical factors that influence the ERP implementation? Why?

- Top management support
- Teamwork
- Understanding of ERP system
- Clear business plan and vision
- Business processes re-engineering
- Software modification
- Sufficient personnel resources
- Suitable hardware and software
- Sufficient training
- User involvement
- Communication
- Vendor support
- Other factors:
