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Abstract

Business Process Reengineering (BPR) is defined as the fundamental rethinking and radical redesign of business processes. BPR is also known as a major approach widely used in facilitating Enterprise Resource Planning (ERP) systems implementation. In addition it has been suggested that an awareness of cultural differences is critical to ERP success. In this paper we examine the impact of human and management organizational subsystems on business process change and performance. We use a comparative study of four Chinese organizations with and without ERP systems. The findings of this study prove the importance of soft aspects in business process change through implementation of ERP systems.

Keywords

BPR, ERP

INTRODUCTION

Enterprise Systems (ERP) are defined as "configurable information systems packages that integrate information and information-based processes within and across functional areas in an organization" (Kumar and Hillegersberg, 2000). The risk of adopting ERP systems is suggested to be as great as their promised rewards (Davenport, 1998). Since the introduction of Material Requirements Planning (MRP) in China at some state-owned companies in early 1980s, 47% of Chinese enterprises have adopted ERP modules, with an annual growth rate of 5% for new installations (Quan *et al.*, 2005). Recent estimates suggest that only about 10% of ERP implementations in China have been successful (Zhang *et al.*, 2003).

Business Process Reengineering (BPR) is defined as radical changes of business processes in order to achieve dramatic performance improvement (Hammer and Champy, 2001). With both focusing on business process, ERP and BPR are closely related: enterprise system provides an ideal information system platform to implement BPR, and a company can not fully utilize ERP system without a thorough BPR. Studies on ERP and BPR phenomenon are mainly focused on Europe and USA, but very few pay attention to developing countries such as China. Several papers examining ERP efforts in China use quantitative method, without providing the required rich background information of case realities (He, 2004; Reimers, 2003; Zhang *et al.*, 2003). This paper examines BPR practices in China through ERP implementation using in-depth case analysis.

LITERATURE REVIEW

ERP

ERP systems are suggested by some authors (eg, Brehm et al, 2001) to work on the basis of some assumptions regarding the business processes and the market in which the organization operates, and impose their own logics on a company's strategy, organization and culture (Davenport, 1998). The logic embodied in the systems may conflict with actual country and company-specific business, especially when there is a misfit of the assumptions between software suppliers and its users. According to IDC 2002 (www.idc.com) overseas suppliers took up more than 50% market share in China. Some authors (Liang et al, 2004) suggest that ERP modules should simply be thoroughly and correctly translated into the other language such as Chinese, including user interfaces, reports, and user help files for the system to be successful. Others suggest that ERP systems are designed for rule-based, mature economies rather than relation-based governance like China (Shen, 1999). The adoption of ERP systems in India for example has resulted in a very painful transition and adaptation period, while the benefits have not been immediate or tangible (Natarajan 1998, and Rajshekhar 2000). In fact in some cases the benefits have been perceived to be much less when compared to the massive cost (Tarafdar & Roy, 2003).

What most of the authors believe to play a key role in a successful implementation of an ERP systems in an Asian country is business process change during the implementation of these systems (eg, Motwani, et al 2002;

Al-Mashari et al, 2000). This change in business process both influences the user's organizational culture and is constrained by it (Krumbholz and Maiden, 2001).

BPR

Business process is composed of business process chain (BPC) and its associated aspects, such as resource, economic, organization, information and decision aspects. Reengineering BPC involves eliminating non-value-adding activities, making activities concurrently executed as much as possible; rethinking and redesigning supply chains (Hammer & Champy, 2001 Peter & Amrik, 1999, and Khan, 2000). A key premise of ERP systems is the underlying 'best practice' which reflects preferred data and process models as well as organizational structures (Kumar and Hillegersberg, 2000). Usually organizations redesign their business processes to cater for these reference models to take full advantages of ERP systems through BPR. Organizations are required to accomplish these changes when they embark on BPR in terms of organizational structure, individual responsibility, management and measurement systems, as well as organizational culture.

Chinese Culture and How this Influences Conducting Business in China

China has been pursuing the open-door economic policy since 1978-79. It has achieved spectacular economic success and is poised to be a major economic power in the world by the mid-21st century. China absorbed over $40 billion in foreign direct investment (Soon, 2003). In information service area, China will surpass South Korea by 2008 in Asia-Pacific region according to the report by consulting firm Gartner Dataquest (Quan *et al.*, 2005). The growth of China's enterprise software comes up to 29% in the 2003-2004 period and sales hits $144 million U.D (Quan *et al.*, 2005).

Enterprise systems like any packaged information system, universally valued, however they are not used in a culture vacuum. There seems to be a misfit between Chinese culture and the embodied assumptions in packaged information systems (Martinsons and Westwood, 1997; Zhang *et al.*, 2003). In social and management science field, culture can be classified as national and organizational (Krumbholz and Maiden, 2001). The research evidence indicates that national culture is likely to have a more salient and long-lasting impact on employees in an organization (Hofstede, 1984). For the purpose of this article, the definition of Chinese Culture refers to a society influenced by Confucius (Ng, 2001), which focuses on national level. Some of the Confucian traditions include: an orthodoxy conscious tradition, a culture-conscious tradition, a morally conscious tradition, a socially conscious tradition, and a 'this-worldly' conscious tradition (Shu-hsien, 1998). Four well-accepted dimensions in national culture proposed by Hofstede (2001) indicate there is a significant 'gap' between Chinese culture and western culture, which differentiate the use of ERP systems and the way of doing business in China from those in western countries. Table 1 summarizes some features of Chinese culture which conflict with the philosophy of applying information system (IS).

Chinese cultural characteristics	Nature of constraint on IS use
Personal relationships are preferred sources of business information	Reliance on information (primarily verbal) rather formal (written) communications
Centralized decision making	Reduced need to exchange information between man angers and employees
Information is a major instrument of personal power	Relatively little information is broadcast or made accessible
High context communications	Data and messages are perceived to lose much of their meaning if they are encoded
Decision making based on intuition and experience	Reduced need for data collection and analysis

Table 1: Chinese Culture and Adoption of IS, adapted from (adopted from Martinsons and Westwood, 1997)

In China, information is treated as personal property which can represent one's power, so management information is typically only for managers (Davison, 2002). In addition, it is significantly difficult in a centralized decision making culture to develop the flatter delegation systems in organizations which are essential to BPR. In Chinese business environment, "Guanxi" or "relationship" serves as the informal channel for the movement of information and money. "Guanxi" is based on personal interest and mutual trust, which constrains the use of formal co-ordination and control mechanisms through adoption of ERP systems (Davison, 2002).

In addition, Chinese culture values family connections and protecting relationships (saving face) which is one of major barriers to changes in China (Keller & Kronstedt, 2005). When ERP and BPR phenomenon are examined in China, cultural factors should be taken into consideration.

RESEARCH FRAMEWORK

Some organizational models are available to analyse changes in an organization. Leavitt's Model (Leavitt, 1965), McKinsey 7S Framework (Peters and Waterman, 2004), and Complex Adaptive Systems (Olson and Eoyang, 2001), are some of the models which provide a rich picture on organizational change with different emphasises.

According to the work-centred analysis (WCA) framework by Alter (1999), business process is a key component in a work system which is the fundamental building block of any organization. 'A firm (or government organization) consists of interrelated work systems that operate together to generate products or services for external customers in a business environment' (Alter, 1999). In a work system, human participants perform a business process using information, technology and other resources to produce products or services. So changing business process is related to the nature of the process itself, organization and information & technology. ERP combines business process and information technology into one integrated information system.

BPR, as a necessary step in any ERP implementation, reviews business practices and procedures in a 'mapping' investigation. The mapping here is a kind of sub-text that becomes the foundation for the entire ERP system. The mapping can be done by ERP consultants or a firm's own in-house team (Schniederjans, & Kim, 2003; Keller and Teufel, 1998). The success of the BPR implementation would be dependent on how thorough this mapping is done. It has been estimated that about 60% of BPR projects fall short of the hoped-for outcomes (Plenert 1994; Sheridan, 1994; Schumacher, 2002). The research framework on the basis of the organizational change models and the existing knowledge about ERP and BPR is summarized in Figure 1.
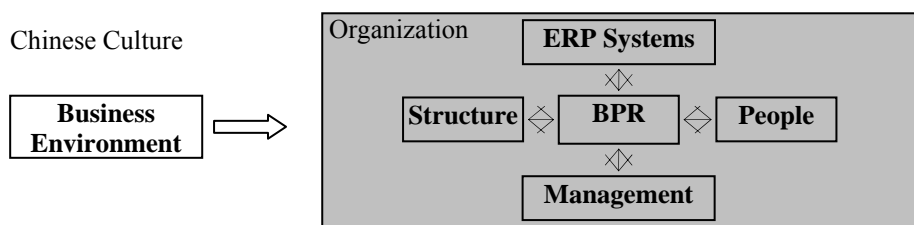

Figure1: Research Framework

BPR practice through ERP adoption is typically influenced by some organizational subsystems of management (measures and motivation), people (skills and empowerment), ERP systems (functionality and flexibility), and organizational structure, including team and coordination mechanisms. Environmental factors such as competitiveness also affect the ERP adoption and BPR. The organizational subsystems and business environment are influence by Chinese culture. The model worked as a guideline in collection and analysis of case data.

Research Methodology

The main types of enterprises in China are state owned, private and joint venture. State owned enterprises (SoEs) are more traditional, while private and joint ventures are more modern but share some common features. The research design is demonstrated in Table 2. The four selected companies all belong to manufacturing sector.

It is suggested that characteristics of research question determine which research method should be used (Järvinen, 2000). The present study used case study method. In this research, case study information came from documents, interviews and direct observation. Documents in the cases include ERP implementation memo, recorded transcripts of interviews on ERP and descriptions of several business processes. We used MachineCo, PowerCo, TelCo and EquipCo to replace names of the four case companies respectively. We interviewed ERP project managers, vice-presidents who were mainly responsible for production, and a number of ERP users in the four case organizations. It has been suggested that collecting different types of data can improve construct validity (Yin, 2002).

The study assumes business process as analysis entry point. So the unit of analysis in this research is a selected business process in the four enterprises. The four cases are used to compare MachineCo with PowerCo, and TelCo with EquipCo to identify some features of BPR's practices in China. In addition, BPR efforts in MachineCo and TelCo are also compared to recognise the difference between SoEs and joint ventures. Because MachineCo and EquipCo, PowerCo and TelCo have similar sizes, we briefly examined their differences.

The research involved collection of background information on these companies on the basis of the companies' publications as well as the information presented on their web sites. This was followed by interviews with the supervisors and the heads of the relevant departments in these companies.

	State-owned Enterprise		Private (Joint) Enterprise
ERP Adopted	MachineCo		TelCo
Non-ERP Adopted	PowerCo		EquipCo

Table 2: Research Design

The interviews used open ended questions to provide an opportunity for the researchers to collect information regarding the steps in the selected business process in each of these organizations. Then semi-structured interviews were used to collect data. For the enterprises with ERP systems, the interview protocol consists of three parts: basic information about the company, ERP application in the company and BPR's efforts, while for the enterprises without ERP systems, the interview questionnaire only includes the basic information section and the analysis of their current business processes.

Case Study Organizations

Basic information about case companies is displayed in Table 3.

	MachineCo	PowerCo	TelCo	EquipCo
Industry Sector	Manufacturing (Machinery)	Manufacturing (Power supply systems)	Manufacturing (Telecom Systems)	Manufacturing (Power supply equipments)
Ownership	SoEs	SoEs	Joint	Private
Employee	1200	4700	4000	1000
Turnover (2004)	US$ 90 million	US$ 600 million	US$ 2 billion	US$ 400 million
Education Background of Employee	Medium level (300 employees received diploma degree or above)	High lever (3000 received diploma degree and above, 1500 got bachelor degree and above)	High level (73 % employees got bachelor degree and above)	High level (85 % employees got bachelor degree and above)
Structure	Traditional Hierarchy	Hierarchy (there are some product lines across several departments).	Matrix Structure or Mix of vertical and flat structure. Vertical feature is dominating.	Matrix Structure or Mix of vertical and flat structure. Vertical feature is dominating.
IS adopted	PDM, ERP, KBS, MES	PDM, MRPII, Storage management systems, financial management systems, order processing system, HR.	PDM, ERP, Purchasing systems	PDM, MRPII, Lotus Notes, HR, Storage management systems, order processing systems.

Table 3: Basic Information about Case Companies. PDM means product data management; KBS is knowledge base system and MES refers to manufacturing execute system.

In Table 3, some general information about case organizations is displayed. This section will provide more details of these companies: history, organizational structure, business environment, information technology in the case companies, performance assessment and motivation in the organizations and ERP adoption in MachineCo and TelCo.

MachineCo

MachineCo has almost 100 years history starting from a simple workshop changing to a modern enterprise specialized in manufacturing packing machines. MachineCo possesses typical traditional SoEs' characteristics. The appointment of executives, allocation of profits and modification in organizational structure are influenced by local government to some extent. According to the vice-president, "some employees think they are serving the government, not the company and their salary is also paid by government, so the company has no right to dismiss them or even change their working responsibility if they do not make big mistakes". The organizational structure in MachineCo is traditional hierarchy which is a typical one of SoEs in China. There are different departments within the organization for which three vice-presidents are responsible. Responsibilities in these

departments are not well defined. Employees within some departments work according to the *ad hoc* arrangements by their managers and previous accepted ways.

The industrial sector (machinery) the company engaged in is a traditional industry in China. The market demand increases steadily by a small rate without radical fluctuations. There is no fierce competition in this area due to averagely lower profits rate. In addition, the products in MachineCo are protected by governmental protection policy. The company has no worry regarding the sales of its products. Unfortunately, government plans to cancel the protection policy and allow other enterprises enter this market, so the company will be confronting much more competition. All customers of MachineCo belong to traditional SoEs.

The ownership, its structure and business environment determine the performance assessment and rewards systems in the organization. In MachineCo, salary is determined by factors such as working in different departments, how long the employee has worked in the company, the managerial position and the profits of the company. Employees' performance and achievement are evaluated by their supervisor and the evaluation is based on personal judgement without clear criteria. In addition, the result is not much related to their incomes. "My salary is just half of others who joined the company 5 years ago", a new graduate said.

Although MachineCo is a SoEs, it recognises the importance of the use of information systems. Prior to the implementation of ERP system, MachineCo invested a lot of money on the IT infrastructure, and the intranet has been operating for 10 year. Information systems are centralized in financial, production and storage management department. Actually, the first application of IS in Chinese enterprises is in financial area many years ago according to the requirement of governmental tax policy. However these systems are separate causing "Information Island". The employment of ERP is to integrate all these systems. Most employees are familiar with Windows Operating System and Office software package. There are about 300 desktop computers in the company. In order to integrate the IS and adapt to new business environment, MachineCo decided to adopt an ERP system in 2002. The adopted modules are production, storage management, purchasing, planning and order processing units. An ordinary department: information central department is charge of implementation of the system. ERP project is shown in Figure 2. Another reason of the adoption is that for the extra profits in SoEs, companies cannot allocate then to employees, and the investments are usual outputs of them.

PowerCo

The company is about 30 years old. It was re-organized from traditional SoEs to modern SoEs and issued shares in 1993. Although government is their biggest shareholder, all the employees also hold some shares. It is more independent in appointment of leaders and allocation of its profits, although it could follow government recommendations. PowerCo still has typical characteristics of SoEs. Originated from a traditional SoEs, it reflects hieratical feature in organizational structure. PowerCo produces several large complex power supply systems and unlike MachnieCo, is made of 5 divisions according to different product lines. In recent years, the structure has changed to some extent in order to increase efficiency and reduce the response time to customers. Some resource departments were rebuilt to serve all the divisions. "We restructure our company according to the concepts of business process. HR, financial accounting, marketing and purchasing departments serve all divisions" manager of purchasing department said. PowerCo still possesses a hierarchical structure, but the company is on its way to a process-oriented organizational structure.

PowerCo also belongs to a traditional business sector in China. Since Chinese government emphasises infrastructure development, this industry has been booming in recent years. PowerCo is facing increasingly intensive challenges in this area. Customers of PowerCo include private companies and SoEs most of which have adopted modern management systems. In recent years, PowerCo has set up complete Key Performance Index (KPI) Examination System. The motivation system is on the basis of overall performance of an employee. PowerCo also possesses good IT infrastructure including the Internet and intranet. Half of employees have personal computers and communicate with each other through internal mail systems. Different software packages are employed in production, financial, R & D, purchasing, HR department, but the systems are working in isolation and are not integrated.

TelCo

TelCo is a joint venture company with a foreign international company holding more shares than Chinese government. It was born through integration between a former SoEs and the foreign company's key business unit in China. Although Chinese government hold some shares, the executives (CEO, CFO) all come from the foreign company. Most employees possess the shares of the company. The hybrid organizational structure consists of vertical departments and horizontal business processes. This kind of structure, together with the performance assessment and rewards systems in the organizations influence their overall performance. EquipCo has a similar organizational structure with TelCo, and the difference between them is that the horizontal structure refers to business processes in TelCo and products lines in EquipCo. For example, in R& D department, two

different products developments teams share the resources in this department, however, they belongs to different business processes or products lines.

TelCo belongs to one of the most competitive business sectors. Some well known companies in this industry in China have closed down in recent years. "I do not know what will happen tomorrow", usually executives said to staffs. TelCo does business with telecom operating companies that represent high level in management systems. The performance assessment is based on the effectiveness of the business processes. In the same department, the bonus one can get is according to the performance of process he or she belongs to.

TelCo possesses fist class IT platform in China. About 10 years ago, it built intranet and introduced different types of information systems. Every employee except production department has personal computer. IT is not a luxurious thing. In TelCo, separate information system packages are integrated and then replaced by ERP system. "Process and ERP have become popular words in our company, and every task I am doing is related with them" said an employee. TelCo adopted one of the most popular types of ERP packages. The system integrated the four main business elements: sales, production, supply and financial. Figure 3 shows the adoption process.

EquipCo

EquipCo was a private company built in 1994 and merged with a foreign company in 2002. Like TelCo, all top management come from overseas. Most of employees hold the shares of the company. For foreign enterprises in China, they operate under the regulations of government such as taxation and environment protection, but all internal affairs in the companies are independent from government. EquipCo possesses a similar organizational structure with TelCo and shares some of the customers with TelCo. There are over 50 competitors in this area in China. "Survival in this industry is our first concern" a top manager in EquipCo.

Like TelCo, EquipCo also uses dual standards to assess performance of the employees. The policy of motivation in the company is to encourage combination of cooptation and individualism. For example, bonus firstly is allocated as a whole to a department or a product line according to the whole performance of them, and then everyone shares the package according to personal contribution to the group performance. The assessment and motivation system in TelCo and EquipCo fosters a holistic view on jobs employees are taking.

EquipCo also has good IS infrastructure and is planning to adopt ERP system, but at present, EquipCo is still using separate IS such as MRP Ⅱ, HR and financial accounting systems. "There are also some business processes in our company, but because we have not adopt ERP system, Notes system is the powerful tool for us to communicate each other" IT manager in EquipCo.

Case Analysis

Comparing Two SoEs: MachineCo (with ERP) with PowerCo (without ERP)

The purchasing process (shown in figure 4 in Appendix) is selected in MachineCo and PowerCo, the differences will be examined. An accurate purchasing plan requires information on current stock level, required material for products, and suppliers, plus complex calculation. In PowerCo without ERP system, the required information is scattered in different departments and sometimes the data from different departments are not consistent. Information exchange between stock management, financial and manufacturing department is done through worksheet manually. Data in financial department are not updated immediately after purchasing staff obtain the new price lists. A lot of time is spent on checking and verifying data across relevant working units. Their major tasks, negotiating prices, verifying new suppliers and monitoring quality are undermined. The outline of the process in MachineCo and PowerCo seems alike; however the efficiency and effectiveness in them are much different. After the adoption of ERP system in MachineCo, obsolete and isolated information systems are replaced by integrated one through shared database. The information about required material for orders, current stocked materials and detailed data about suppliers can be accessed in real-time on uniformed platform. Some non-value-adding functions are eliminated such as data checking and verifying. So the process becomes more efficient. After the required material purchasing plan is input, purchasing orders for different suppliers can be produced automatically and immediately. This process involves a lot of complex business rules and calculations, and the most trivial tasks are accomplished by ERP system and the employees have more time on value-adding tasks.

As it has been noted the process of ERP adoption in MachineCo, involves automation of some of the main processes in the organization rather than take BPR as essential step in ERP implementation. One reason is that MachineCo is a medium size traditional SoEs in more stable business environment. It is risky and more difficult to embark on radical changes. In addition, business processes in MachineCo are comparatively simple. According to the above analysis, purchasing process in MachineCo should be more efficient than that in

PowerCo. However, ERP system for purchasing department in MachineCo did not bring about lower stock level and material prices, more reliable suppliers and reduction of staff, but more spare time for them. Executives are more concerned about providing equipments on time than the cost. The company has a monopolistic market under government special protection policy. So there is no clear assessment in the process unless there is shortage of required material. For the redundant staff, they think they serve the government and get salary from the government, not from the company, and it is very difficult for managers to relocate them. Even under this situation, MachineCo still can guarantee the expected profit.

Even without ERP system, PowerCo still can run its purchasing process in a more efficient way at expense of much extra working time. The department is required to reduce purchasing cost and staff by 5% per year which is associated with their bonus. But a small error in data entry or transfer would cause vital deviation of purchasing plan, so employees have to spend much time on data checking. "We work under much pressure and have no spare time" one employee said.

The adoption of ERP system in MachineCo did not radically change the purchasing process, but the system significantly improves the efficiency of the process. However, the achievement in business efficiency did not much contribute to its effectiveness in MachineCo because it did not change its measurement systems and the employees' empowerment is poor. Next comparison examines the two joint (private) companies.

Comparing Two Joint (Private) Companies: TelCo (with ERP Adoption) with EquipCo (without ERP)

Unlike above case, TelCo and EquipCo share more similarities in organization structure, employees education background, management system and business environment. In ERP project, TelCo thoroughly analysed "as-is" and "to-be" processes and incorporated BPR into ERP efforts. Here, Sales Order process is taken as unit of analysis. After adoption of ERP system, material management (MM), production planning (PP), financial accounting (FI), and sales and distribution (SD) are integrated. Although the activities interface in order process only involves customer and sales, salesman needs information about customers' financial status, current available products and possible delivery data, which are distributed in different departments and ERP modules. Salesmen can access all required information from the shared database in real time. This integrated IS platform brought some convenience for accessing information and avoiding obsolete data, so this reengineered process seems simpler and more efficient. However it is only partially supported by the system because of frequent organizational adjustment and informal business rules in the environment. For example, ownerships of business processes are unstable because personnel responsibilities are regularly changed to adapt to unstable market environment, or deal with new products or services. This is common when a company has a high growth rate. Customers usually can not do payments according to the items in contracts and change shipping schedules. These uncertainties make it more different to formalize a business process based on ERP system. Even now, TelCo still optimizes and modifies its processes to adapt to Chinese business context.

For EquipCo, with the legacy IS, only for credibility check, it needs four information exchanges between three departments through phone or fax or email. Fortunately, most of transferred information is not so complex due to comparatively simple products. But data redundancy and inconsistence are common problems. Comparing the two processes in TelCo and EquipCo, they are not much different except TelCo eliminates some data exchange tasks due to the shared database.

Although EquipCo has not adopted ERP system yet, it organizes and manages the company on the basis of process-oriented view. Promotion and allocation of bonus are according to personal performance both in their departments and relevant business processes. For example, hardware developers have to care about the quality of their final products in the market. This mechanism encourages a holistic view on business process and focus on customers. "If my company adopts ERP system, our work will be easier and we do not work at weekends and nights anymore, I suppose" a salesman expressed his views on the adoption of integrated IS.

In this case, ERP adoption in TelCo also did not cause radical changes in the selected business process. However, the change significantly improved the efficiency and effectiveness of the process because its organizational structure, management system and people support the effective execution of the process.

Cross Cases Analysis

Although MachineCo and TelCo both implemented ERP systems, they achieved different outcomes. The benefits from ERP in MachineCo are not tangible. ERP only streamlines the data flow and all departments can share the real time information. In TelCo, the ERP adoption obviously improved decision making level, reduced the product cost and response time. For example, the stock cycle time was reduced from 240 days to 70 days. It is the difference in organizational structure and culture, changes in business processes, motivation of the ERP adoption, management systems and people that contribute to this result.

Although MachineCo and EquipCo have similar size and MachineCo has used ERP system, the overall performance in EquipCo is much better than that in MachineCo. Besides the difference in structure, ownership and management system, another main factor is the human system. EquipCo possesses highly educated human resource and employees in EquipCo are more open-minded, motivated and empowered. It is interesting that PowerCo and TelCo also share similar size and one with ERP and one without ERP. In management systems, business environment and human resource structure, they take on some similarities. However, as a SoEs, PowerCo is still constrained by government policy and internal resistance to changes in organizational structure and assessment systems is much more difficult than the resistance in TelCo.

Discussion

In the analysis of the processes in case companies, we did not see radical changes in business processes when companies implemented ERP systems. BPR's philosophy advocates "clean-slate" in order to obtain "radical" effect. Many enterprises employed separated IS in some functional units such as MRPΠ in manufacturing department. Through using these systems, companies had accumulated some experience in dealing with IS and formed their ways of doing business. Most of the companies consider ERP systems simply as another software package. For MachineCo, although its business processes are not complex, there are still some implementation problems even if it only followed its previous processes. The adopted ERP system only provided one quality inspection point, but MachineCo usually requires three points, so the vendor is trying to customize the software to cater for this particular requirement. The company is trying to avoid large scope changes and any attempt at reengineering its business process may require more customization in different parts of the systems and that is considered as falling into deep trouble by the company directors. Executives in SoEs have to pay more attention to the completion of the project within time and budget, than to the actual effectiveness of the project. The most important thing of the ERP project in MachineCo is that the adoption project can be completed on time without causing instabilities. Another significant reason to resist radical changes is the Chinese culture. Chinese culture favours maintaining stability and resisting changes, which is very obvious in our SoE case companies. Chinese attitude to information systems conflicts with the assumption of ERP systems. The accuracy rate of the data in MachineCo even now is about 80%. The company still mainly rely on informal communication and experience, not accurate data to make decision.

In accordance with the social constructionist view, the interpretive research standpoint pays much attention to the feeling and thinking of people individually and collectively. The users of ERP system, the decision makers, and performers of a business process are people. The organizational structure and management also are designed to determine employees' responsibility and assessment. It is the highly empowered employees that make the business process in EquipCo effective without ERP system. ERP adoption (Al-Mudimigh *et al.*, 2001) and BPR (Reijers and Mansar, 2005) initiative are both commonly seen as a socio-technical challenge. The business processes can only reflect technical aspect from socio-technical view. Other two subsystems, human system (culture, motivation, communication, willingness to change ect.) and management system are more important to contribute to overall organizational performance (Margulies and Colflesh, 1982). This is why BPR practices through ERP systems in different companies brought varied outcomes as discussed above. In China, where the culture is much different from the assumptions embedded in ERP systems and BPR, the soft aspects, especially human factor determine the result of BPR through ERP adoption.

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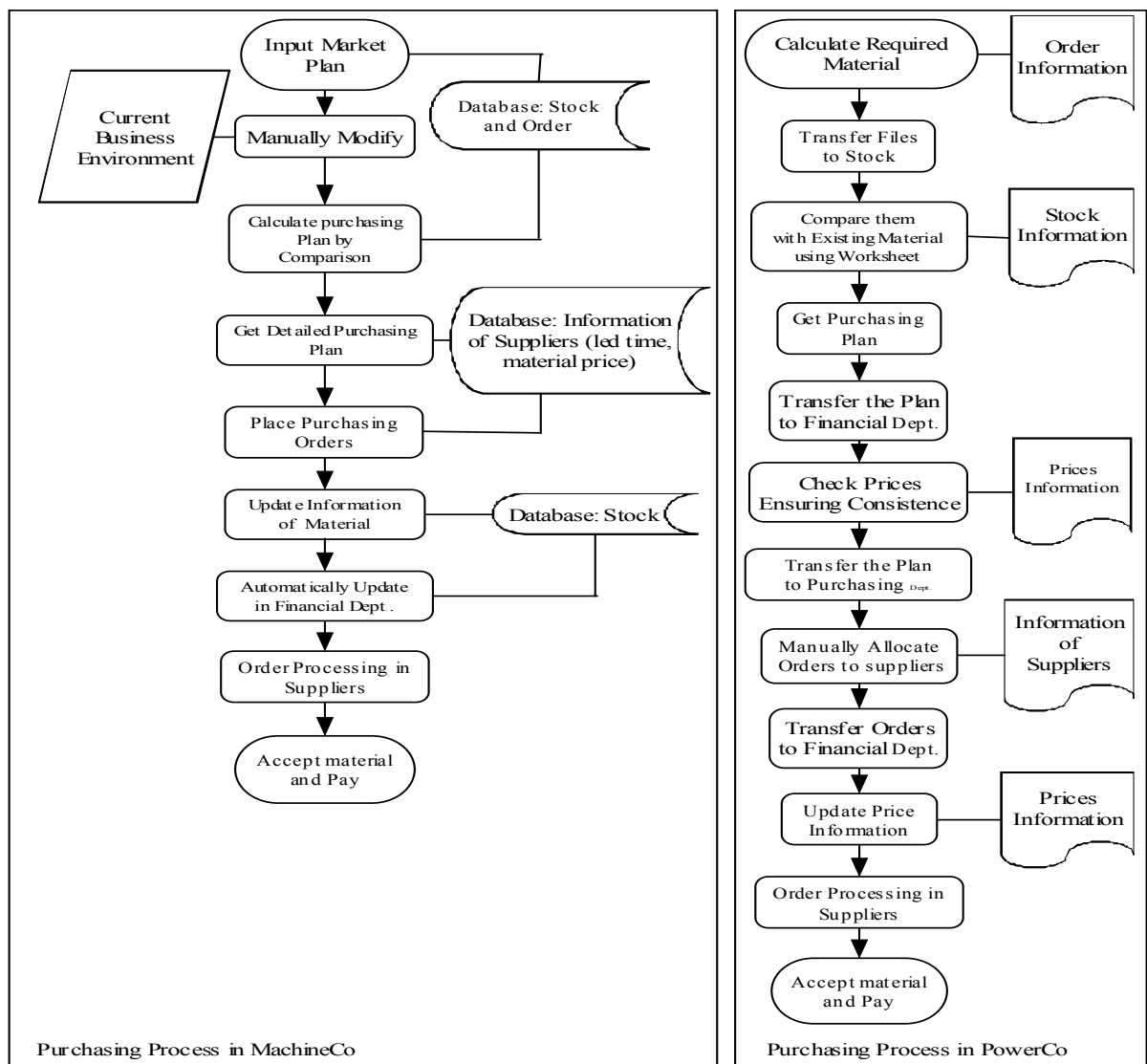
Figure 4: Purchasing Process in MachineCo and PowerCo.

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