

# A Comparative Study of Business Process Reengineering in China

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## ABSTRACT

*This research investigates the current status of business process reengineering (BPR) in China by answering the following two questions: How do Chinese business executives view benefits, critical success factors, and major obstacles of BPR implementation? What are the managerial implications of BPR in China? Data were collected by means of survey questionnaires to senior managers in Beijing and Shanghai. Of the 195 survey questionnaires out, 110 usable returns were received, a 56.4 return rate. As far as the 110 usable returns are concerned, 62.4% of them were answered by presidents, vice presidents, chief financial officers (CFO) or chief information officers (CIO), with the remaining 37.3% by middle level managers or their equivalent. Statistic analysis results indicate that while BPR has played an important role in making the enterprises in China more effective and efficient, its implementation has been uneven among various types of business sectors and ownerships. We find that management support, cross-functional communications, cross-unit project team, and measurable BPR objectives are the top of the list for critical success factors, whereas a culture that resists changes & new ideas, lack of innovation incentives to state-owned enterprises, seniority, not performance, based promotion, and unemployment pressure of process restructuring are the top four obstacles in China.*

Key words: BPR Implementation, Business Process Reengineering, China, Empirical Study.

## INTRODUCTION

Business process reengineering (BPR) evolved from the experiences of the US-based companies in the 1980s. These companies radically changed their processes by applying modern information technology innovatively, such as enterprise resource planning (ERP), in pursuit of change management and improved performance. Since its inception two decade ago, BPR has become a buzz word to bring about innovative initiatives and cultural changes in the business world. Many companies deployed BPR and achieved new competitive advantages in the global marketplace.

According to Huang and Palvia (2001), change management and corporate culture have played significant roles in BPR and ERP acceptance in various countries. Factors affecting BPR implementation results can be classified into two categories: national & environmental and organizational & internal. National & environmental factors include such variables as economy and economic growth, infrastructure, and government regulations. Organizational & internal factors describe such firm specific aspects as information technology (IT) maturity, BPR experience, and computer culture. On the one hand, information technology, such as ERP, enables and reinforces firms' innovative behavior as one of the key success factors for BPR and change management. The Conference Board (2004) reports that "IT systems that don't mesh, making it difficult to consolidate data cross the organization" as one of the key obstacles to innovation and BPR. On the other hand, BPR is considered as one of the prerequisites for a successful ERP implementation. However, Martinsons and Hempel (1998) argue that the ability to adopt new information technology depends on various social, economic, and political factors. Among the most important of these factors is the existing culture – a deep and deterministic aspect of human life. In studying national difference and implementation practices, Sheu *et al.* (2003) find that culture and language, government and corporate policies, management style, and government regulations are among the key aspects that have to be taken into consideration to successfully implement BPR & ERP in the global marketplace. Moreover, Martinsons (2004) reports that even in the same country using the same information technology, four private (non-state) ventures (PVs) that he studied performed significantly better than four state-owned enterprises (SOEs) in implementing ERP in China. Thus, he believes that different types of organizations even within a single country may behave differently due to social, cultural, and government policy influences.

Based on a survey of 150 enterprises in China, He (2004) finds via a resource-based perspective that BPR is one of the critical success factors (CSFs) of ERP implementation along with executive support, ERP-SCM vision, and ERP

concept. While high costs, high complexity are considered the most commonly encountered obstacles of ERP implementation both in China and in USA, insufficient IT infrastructure, lack of well-trained workers, lack of incentives for the state-owned enterprises (SOEs), and different corporate culture are China specific obstacles to ERP implementation (He, 2004).

Since mid-90s, a large number of Chinese scholars have devoted themselves into the research of BPR. Some of them studied the necessity of applying BPR in China, some of them studied the modeling techniques and the modeling methods of BPR, and others studied the factors that affect the successful implementation of BPR. Their work contributes to the spread and the successful application of BPR in China. However, much of the work was focused on theoretical conceptual discussions, and little was on firm level practical business applications.

This paper tries to bridge the gap via an executive survey research on 110 Chinese companies and subsequent statistical analysis to reveal the insights of BPR implementation in China and its impact on Chinese enterprises. The main objective of this research is three fold: i) to reveal the current status of BPR implementation in China, ii) to zero in the factors that affect BPR implementation in China, and iii) to discuss managerial implications of BPR implementation in China.

The rest of the paper is designed as follows. Section 2 describes the research methodology and data collection. Section 3 provides the statistical analysis and interprets the survey results. Section 4 discusses the managerial implications. Finally, section 5 summarizes the research findings and future research directions.

## **METHODOLOGY**

Our research methodology includes the preliminary questionnaire design based upon our past consulting practice and research experience on ERP & BPR, pilot studies, and the resulting survey questionnaire. The survey questionnaire is classified into four parts. The first part consists of questions relevant to respondents' demographic information. The second and the third are the core of the survey questionnaire with questions rated in a 1-7 Likert scale: 1 -- strongly disagree, 2 -- disagree, 3 -- somewhat disagree, 4 -- neutral (including no opinion, or not sure), 5 -- somewhat agree, 6 -- agree, and 7 -- strongly agree. The fourth part offers questions for those companies that have complemented or are in the process of implementing BPR. This survey questionnaire was distributed to senior managers who are at Tsinghua University's Management Training class, at the University of Science and Technology Beijing's EMBA classes, and at the Sino-Europe EMBA classes in Shanghai. Of the 195 survey questionnaires, 110 were usable returns, a 56.4 return rate. 62.37% of the respondents were presidents, vice presidents, CFO or CIO, and 37.27% were middle level managers.

Statistical analysis consists of descriptive statistics, hypothesis testing and reliability test using SAS. Descriptive statistics aims to reveal the current situation of BPR in China. Hypothesis testing is used to test if the Chinese enterprises agree with the statements in the questionnaire with statistical significance. The reliability test is conducted to examine the consistency of the data by means of Cronbach's alpha test.

## **STATISTICAL ANALYSIS**

### *BPR Implementation in China*

Table 1 shows the summary statistics of BPR implementation in China. It is seen from Table 1 that 29.1% of the companies surveyed have implemented or are in the process of implementing BPR, 42.7% of the companies will implement BPR in the next 3 – 5 years, 13.6% of the companies have no intention to implement BPR at this point, and 14.5% of the companies have not made a firm decision yet as to whether or not they will implement BPR in the foreseeable future. In other words, the majority of Chinese firms (71.8%) are positive toward BPR implementation, whereas the rest of the Chinese companies (28.2%) are either negative or undecided toward BPR implementation.

### *BPR Success Rate*

Table 2 illustrates that of the 32 enterprises that have implemented or are in the process of implementing BPR, four companies failed to tell whether their BPR implementation is successful or not due to the fact that these firms have just started their BPR projects and it is too

	Have implemented or undertaking BPR	Will implement BPR in 3-5 years	Will not implement BPR	No decision has been made yet
# of firms	32	47	15	16
Subtotal %	29.1%	42.7%	13.6%	14.5%
Total %	71.8%		28.2%	

Table 1: BPR Implementation in China.

	Exceeded expectations	Reached all objectives	Reached most of objectives	Had negative effect	No opinion
# of firms	0	13	15	0	4
Subtotal %	0	40.6%	46.9%	0	12.5%

Table 2: BPR Success Rate in China.

early to predict the implementation results. The remaining 28 enterprises have reached either all the objectives or most of the objectives via BPR implementation, i.e., no companies have selected either the positive extreme (exceeded expectations) or the negative extreme (had negative effect). Specifically, 13 companies out of 32 have reached all the BPR objectives (or 40.6%) and 15 have reached most of the objectives (or 46.9%), which are comparable to what is reported in the West (Belmiro et al, 1997).

### Concept of BPR

Table 3 summarizes the descriptive statistics of the top four commonly cited concepts on BPR among Chinese executives, where the percentage value under the column “%Agreed” represents the sum of scales 7 (strongly agree), 6 (agree), and 5 (somewhat agree) on each of the survey questions. It is seen from Table 3 that 91% of Chinese firms agree that BPR implementation is a way to improve customer service & to break functional silos, 83% agree that BPR is a management technique, 82% agree that BPR is a prerequisite toward information integration, and 81% agree that BPR is useful if it can be implemented with firm specific objectives. These results echo the positive, but cautious attitude toward of BPR in China as in Table 1 since Chinese executives call for firm specific objectives when implementing BPR. In fact, of the 72 BPR techniques and 25 methods regarding BPR implementation in the literature, most Chinese firms prefer incremental continuous improvement approach to revolutionary reform method (Luo, 2002; Pan and Chen, 2002).

Description	% Agreed
1. BPR is a way to improve customer service & to break functional silos	91%
2. BPR is a management technique	83%
3. BPR is a prerequisite toward information integration	82%
4. BPR is useful if it can be implemented with firm specific objectives	81%

Table 3: Concept of BPR in China.

### Potential Benefits of BPR

Obtaining potential benefits is one of the most important motivations of BPR implementation. Table 4 depicts the top four benefits of BPR in China. “BPR facilitates communications and improves information sharing” is considered number one benefit with 92% of the respondents agreed, followed by “BPR enhances competitiveness” as number two with 87% executives agreed, “BPR helps improve productivity and reduce costs” as number three with 86% companies agreed, and “BPR enhances corporate strategy” as number four with 86% firms voted yes. These results are consistent with a recent research study conducted in Singapore, where top three benefits are reported to be: improving operational efficiency, improving customer service, and reducing cost (Ranganathan and Dhaliwal, 2001), which echoes the CSC/Index survey results on the top three benefits of North American firms as improving the speed of business process, cost cutting, service and quality improvement. While improving efficiency and cutting costs are important benefits of BPR implementation in USA and other developed nations, facilitating communications & improving information sharing has its special meaning to Chinese executives. That is, since is new in market economy and Chinese companies are in transit from traditional authoritarian management style to

modern scientific management, such as information integration and computerized decision support systems, effective communication and information sharing become increasingly important as firms grow bigger and global competition becomes tougher (Martinsons and Hempel, 1998).

Description	% Agreed
1. BPR facilitates communication & improves information sharing	92%
2. BPR enforces competitiveness	87%
3. BPR helps improve productivity and reduce costs	86%
4. BPR enhances corporate strategy	86%

Table 4: Benefit of BPR in China

#### *Critical Success Factors and Major Obstacles to BPR in China*

Table 5 lists the top four critical success factors of BPR in China. Although it is no surprise to see that management support is on top of the list with 95% of the respondents agreed, the number two ranked improving cross-functional communications (95%) is unique in China, which is consistent with what is in Table 4 as number one benefit of BPR in China: BPR facilitates communications and improves information sharing. It is seen from Table 5 that cross-unit project team composition and measurable BPR objectives are also highly agreed by the Chinese executives, indicating importance of employee participation and evaluation criteria.

Table 6 provides major obstacles to BPR in China. It is seen from Table 6 that the top three major obstacles are unique to China due to different management style, coexistence of privately owned, state-owned, & other forms of ownerships, and corporate culture & government

Description	% Agreed
Management support	95%
Improving Cross-functional communications	95%
Cross-unit project team composition	94%
Measurable BPR objectives	93%

Table 5: Critical Success Factors of BPR in China.

policies. “A culture that resists changes & new ideas”, for example, would not change over night, whereas “lack of innovation incentives to SOEs” is a product of corporate culture and government policy. While unemployment pressure is common to any economy, it is especially challenging in China with over 60% of rural population seeking employment opportunities in urban areas.

Description	% Agreed
1. A culture that resists changes & new ideas	73%
2. Lack of innovation incentives to SOEs	72%
3. Seniority, not performance, based promotion	62%
4. Unemployment pressure of process restructuring	57%
5. Lack of senior management commitment	55%
6. Lack of a coherent BPR strategy	50%

Table 6. Major Obstacles to BPR in China.

### **MANAGERIAL IMPLICATIONS**

The statistical analysis results above have three managerial implications. First, the principal motivation of implementing BPR to vast majority Chinese enterprises is to “facilitate communications & improve information

sharing” since such benefits are fundamental for information technology advancement and data integration advancement, which is one of the key competitive advantages of multinational corporations. According to the Conference Board (2004), 63% of the US companies agree that their “leaders visibly promote new ideas”, 61% agree that “risk taking and entrepreneurial behavior” are encouraged, 59% agree that “innovation is as important as cost reduction”, and 58% agree that “formal process to collect and harvest new ideas” is imperative to change management and business process reengineering. It is worth noting that contrary to seeking new ideas and taking innovative initiatives in the US, Chinese executives tend to be more practical, but less innovative. That is, facilitating communications & information sharing would eventually help Chinese firms change management and culture, but it would not help them become creative with their own inventions and brand names. It is the executives’ visible promotion to new ideas that the Chinese executives are to pursue in the global marketplace in addition to what is deemed practical and technical.

Second, the biggest obstacle to BPR in China is “a culture that resists change & new ideas”, which contributes in part to the Chinese culture and organizational structure. As a comparison, we list the major obstacles to innovation and BPR success in US (Conference Board, 2004):

1. Organizational alignment issues (52%)
2. Lack of resources to support promising new ideas (51%)
3. Lack of a coherent innovation strategy (49%)
4. Need for performance goals and metrics (44%)
5. Inadequate leadership of the effort (44%)
6. Lack of a comprehensive knowledge management system (38%)

At a first glance, both US companies and Chinese firms have to deal with organizational alignment issues as their foremost obstacle to innovation and BPR. The difference, however, is that Chinese companies have to fight an uphill battle against a culture that resists changes and new ideas, whereas US firms have to encounter the organizational alignment issues, such as long turn strategic directions. Since to many executives of state-owned enterprises in China, status quo is the best defense against any innovation or change management, it is imperative to understand the negative impact of such actions in order to break the vicious cycle: a culture that resists changes & new ideas -> lack of innovation incentives to SOEs -> underperformance of SOEs.

Third, it is important to understand the concept of resource-based perspective in implementing BPR in China. According to He (2004), history plays two roles in increasing the cost of imitating a successful firm’s strategies and practices: a) a firm’s current ability may depend on its being in the right place at the right time, and b) a firm’s resources, such as IT infrastructure and managerial know-how, can only be developed over a long period of time. In other words, Chinese companies should not simply copy what is working in the developed nations in implementing BPR. Instead, they ought to reanalyze their strengths and weaknesses, take advantage of the existing resources, make necessary changes that fit best to existing Chinese culture, and pursue recourse-based competitive advantages in the global marketplace. Paper and Chang (2005) confirm in their study on BPR success factors that environment, people, methodology, IT perspective, and strategic vision are major factors affecting the success or failure of any BPR implementation.

## **SUMMARY**

This paper investigates the current status of BPR implementation, factors affecting BPR in China, and their managerial implications. While not all Chinese firms are very clear about BPR benefits and implementation details, statistical analysis results confirm that they demonstrate great enthusiasm and consistency in accepting what BPR can do to facilitate communications and improve information sharing. We find that management support and improving cross-functional communications are the top two critical success factors; a culture that resists changes and new ideas is the number one ranked obstacles to BPR implementation in China.

We believe that although facilitating communications & information sharing would eventually help Chinese firms change management and culture, it would not help Chinese enterprise become creative with their own inventions and brand names. Thus, it is the executives’ visible promotion to new ideas that the Chinese executives are to pursue in the global marketplace in addition to what is deemed practical and technical. Consequently, we suggest that Chinese enterprises reanalyze their strengths and weaknesses, take advantage of the existing resources, make necessary changes that fit best to existing Chinese culture, and pursue recourse-based competitive advantages in the global marketplace.

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