

December 2003

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## Recommended Citation

Ke, Weiling; Wei, Kwok-Kee; Chau, Patrick; and Deng, Zonghuang, "Organizational Learning in ERP Implementation: An Exploratory Study of Strategic Renewal" (2003). *AMCIS 2003 Proceedings*. 139.

<http://aisel.aisnet.org/amcis2003/139>

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# ORGANIZATIONAL LEARNING IN ERP IMPLEMENTATION: AN EXPLORATORY STUDY OF STRATEGIC RENEWAL

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## Abstract

*This paper reports on a case study of a large firm that implemented an enterprise resource planning (ERP) system in China. We propose that ERP implementation is a process of organizational strategic renewal. Focusing on the firm's assimilating new learning (exploration) and using what has been learned (exploitation), we study the transference of learning among three levels - individual, group and organization, following the organizational learning framework proposed by Crossan and her colleagues (1999). The results suggest that a strong leadership and creating a crisis in the organization make people accept the ERP implementation project and contribute innovative ideas. Mechanisms to encourage learning and core teams consisting of multidisciplinary personnel that bring knowledge of all aspects together are necessary for achieving strategic renewal by the adoption of ERP systems. While it is important to get external knowledge from consultants, the involvement of senior and mid-level managers in the ERP implementation is critical for the organization to strike a balance of adaptation to and customization of the ERP system. Such a balance ensures the success of ERP projects in China.*

## Introduction

As an enterprise-wide application software, an enterprise resource planning (ERP) system allows a firm to tightly integrate all business functions, such as manufacturing, financial, human resources, distribution and order management (Robey et al., 2002). ERP has been treated as an enabler of enterprise success in China in the last five years. The growth rate of the ERP software market in China was 52.6% in year 2001 and it is expected to grow even faster. But the result of its implementation turned out to be quite unexpected. Success rate is only about 10% and there is even fewer organizations achieving performance improvement after their ERP implementation. It is quite common for the problems in ERP implementation to end in failure and even legal actions in China.

Given the great risks in ERP implementation and potential benefits promised by ERP systems, it is essential to conduct research focusing on ERP implementation in China. Current research in ERP tends to be drawn from the experience in developed economies and existing theories are grounded in this context (Hempel & Kwong, 2001). Hence they provide limited guidelines for the ERP implementation in developing countries including China. In order to provide some insights into how to achieve ERP implementation success, we conducted the study reported here.

In this paper, we propose that ERP implementation in China is an organizational strategic renewal process and study how the organization manages the process. To achieve strategic renewal, the organization explores and learns new ways while concurrently exploiting what they have already learned (March, 1991). Managing the tension between exploration and exploitation is the critical challenge of strategic renewal. We adopt the organizational learning framework proposed by Crossan et al. (Crossan et al., 1999) to discuss how a large organization in China managed the interaction among individuals, groups and the organization in exploration and exploitation while it was implementing its ERP system. It is found that the top management team's making vision

clear and creating a crisis is important to make people accept the project and willing to contribute their innovative ideas. In addition, having senior and mid-level managers of business units participated in the ERP implementation project is critical for project success. Their involvement ensures a continuity of the past and present, thus the employees will not have the anxiety of identity change and resist the strategic renewal. Moreover, core teams consisting of multiple-disciplinary people within the organization and the expertise assistance provided by the consulting firm are major factors that affect the interaction among individuals, groups and the organization. Our findings provide guidelines for the practitioners in ERP implementation in developing countries. Theoretically, we provide a new perspective of studying ERP implementation, focusing on the exploitation and exploration processes that allow the organization to achieve strategic renewal. Our paper highlights the need for further research on strategic management of the ERP implementation from organization learning perspective.

## **Theoretical Background**

### ***ERP Implementation and Strategic Renewal***

With China's accession to the World Trade Organization (WTO), Chinese organizations are required to compete with foreign companies fairly according to the rules and regulations of WTO. Such requirement is of great challenge to the organizations in China as most of them just started to switch their business models from planned-economy to being market-oriented. To survive in the market, it is essential for Chinese firms to accelerate the process of their organizational transformation and adopt advanced information systems that can help them to enhance operation efficiency and the effectiveness of managerial decisions. Taking ERP systems as an enabler to derive competitive advantages, Chinese organizations are embracing these systems.

For Chinese organizations, ERP implementation is an organizational strategic renewal (Barnett & Burgelman, 1996) process. It is an iterative process of belief, action, and learning, with the purpose of aligning the organization's strategy with changing environmental circumstances (Huff et al., 1992). The uncertain environment and the hyper-competitive market challenge the organization's status quo structure, culture and business practices. ERP systems contain business process reference models, which are called "best practices" as they have been proved in world-class companies (Lee & Lee, 2000). These business reference models can be transferred to Chinese organizations and mapped to their business processes and routines. Moreover, ERP is not just a software package embodying established ways of doing business, but an organizational infrastructure that affects how people work and it imposes its own logic on a company's strategy, organization, and culture.

While ERP implementation provides the organization with the opportunity to transform its structure and streamline its business processes, it is not appropriate for Chinese organizations to take ERP systems as they are. On the one hand, Chinese organizations' information infrastructure is not as developed and their management style and business models are very different from those of the Western world - the origin of ERP systems. Customization of the systems is required. On the other hand, the national and organizational cultures in China are different from those of western world. Compared with Western cultures, Chinese culture is more past-oriented, reactive and reluctant to change established social relationships (Martinsons & Hempel, 2001). Hence, the stress created by implementing ERP systems will interact with inertial forces in the organization to produce a punctuated equilibrium pattern of strategic change in Chinese organizations.

### ***Organizational Learning Processes in Strategic Renewal***

The study of organizational learning considers organizations as cognitive entities that are capable of observing their own actions, experimenting to discover the effects of alternative actions, and modifying their actions to improve performance. Organizational learning is a multilevel phenomenon that happens at individual, group and organization levels (Huff et al., 1992). It can be treated as cognitive activities of the organization and actions taken to change organizational memory (Walsh & Ungson, 1991).

There are several organizational learning process frameworks. Treating organization learning as a cognitive process, Huber (1991) proposes a framework that includes knowledge acquisition, information distribution, information interpretation, and storing and retrieving information to/from organizational memory. A second organizational learning framework combines both the cognitive and action perspectives of learning and identifies four processes of organizational learning – observing, reflecting, creating and acting (Carroll, 1998). Similarly based on both cognitive and action components of organizational learning, Crossan et al. (1999) identify four processes, i.e., intuiting, interpreting, integrating and institutionalizing. These processes take place at different levels of organizational learning and the levels interact with each other.

Organizational learning is a principal means for a firm to achieve strategic renewal (Crossan et al., 1999). In the process of strategic renewal, organizations undergo exploration and exploitation (March 1991). Indeed, a central component of strategic renewal success is the maintenance of a balance of exploration and exploitation within the firm (Cohen & Levinthal, 1990; Hendry, 1996; Levinthal & March, 1993). Exploration is “the pursuit of new knowledge of things that might come to be known” (Levinthal & March 1993). It captures “search, variation, risk taking, experimentation, play, flexibility, discovery, innovation (March, 1991: 71) and generates new knowledge with potentially high but uncertain returns (Schulz, 2001). Exploitation is “the use and development of things already known” (Levinthal & March, 1993). It captures “refinement, choice, production, efficiency, selection, implementation, execution” (March 1991: 71) and generates incremental knowledge with moderate but certain and immediate returns (Schulz, 2001).

Among these three frameworks, Huber’s framework studies the learning at organizational level only. The ERP implementation involves the interaction among individuals, groups and the organization. In addition, the organization enacts the rules and new business processes following its ERP implementation. The learning involved in such strategic change should be studied as both a cognitive and action process. Hence Huber’s framework is not appropriate for the study of strategic renewal enabled by the ERP implementation. Though Carroll’s framework has both cognitive and action components of organizational learning and studies the interaction among individuals, groups and organizations, it focuses on specific learning activities rather and the source of learning is an organization’s own experiences. It does not address the issues involved in the exploration process – the learning pursuing new knowledge by experiments and taking risk. By contrast, Crossan’s explicitly identifies exploration and exploitation in organizational learning. The feed forward processes of learning, i.e., the transference of learning form individuals and groups through to the organization that becomes institutionalized, relates to exploration. The feedback processes – the way in which institutionalized learning affects individuals and groups, relates to exploitation. Hence we use this framework to describe how the organization managed its learning in the strategic renewal process of ERP implementation. The definitions and actions involved in each process are as follow:

**Table 1. Four Processes of Organizational Learning (Adapted from Crossan et al. (1999))**

<b>Process</b>	<b>Definition</b>	<b>Actions Involved</b>
Intuiting	Pre-conscious recognition of the pattern and/or possibilities inherent in a personal stream of experience.	t affects the intuitive individual’s actions, but it only affects others when they attempt to interact with that individual.
Interpreting	Explaining, through words and/or actions, of an insight or idea to one’s self and to others.	It goes from the preverbal to the verbal, resulting in the development of language.
Integrating	Developing shared understanding among individuals and of taking coordinated action through mutual adjustment.	Dialogue and joint action are conducted to develop shared understanding. It is ad hoc initially and will be institutionalized if the coordinated action taking is recurring and significant.
Institutionalizing	Ensuring that routinized actions occur.	It embeds the learning that occurred by individuals and groups into the organization and it includes systems, structure, procedures and strategy.

Among these four learning processes, intuiting occurs only at the individual level while institutionalizing is an organization-level phenomenon. Interpreting links the individual and group levels, and integrating bridges the group and organizational levels (Crossan et al. 1999). The interaction among the three learning levels, glued by the four learning processes, creates a tension between exploration and exploitation. While new ideas flow from the individual to the group and to the organization levels through the feed-forward processes, what the organization has learned feeds back from the organization to group and individual levels and thus affects people’s cognitive maps.

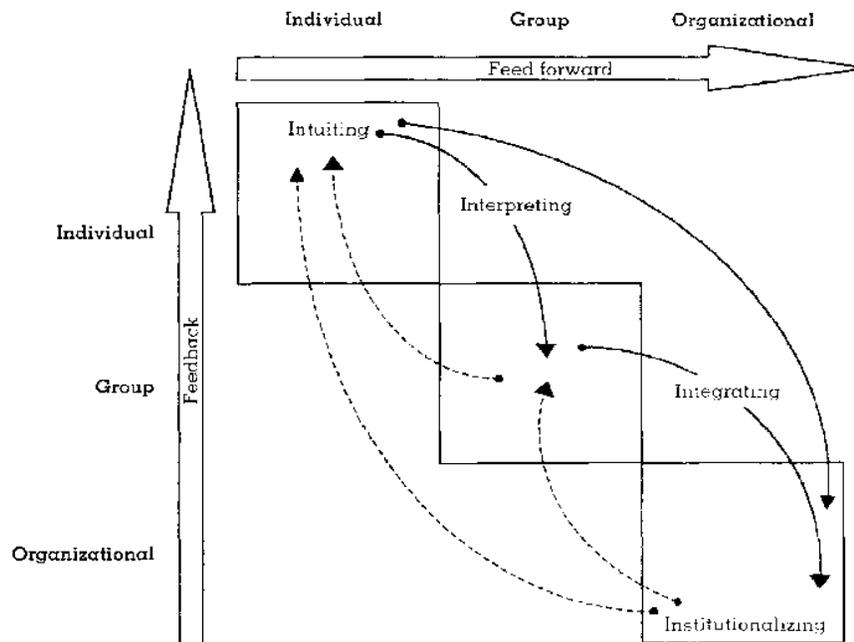


Figure 1. Dynamic Process of Organizational Learning (Adapted from Crossan et al. 1999)

## Methods and Data Collection

To investigate how an organization manages its organizational learning required by strategic renewal enabled by ERP implementation, we conducted a case study with a large organization in China. A case study is a research strategy “that attempts to examine a contemporary phenomenon in its real-life context, especially when the boundaries between phenomenon and context are not clearly evident (Yin, 1994).” Case studies are the preferred strategy when “how” or “why” questions are being posed. Our research in the process of organizational learning happening in ERP implementation clearly justifies a case study. Focusing on a single case, we can study the ERP implementation in greater details. Moreover, we view and describe the ERP implementation project through an organizational learning lens by adapting the framework of Crossan and her colleagues’. Employing a positivist case study method, we pay attention to construct validity, reliability and external validity.

Validity of this study is supported by employing multiple sources of evidence and data collection methods (Benbasat et al., 1987; Yin, 1994). We were allowed to access the written documentation regarding this organization’s ERP implementation, including meeting minutes, interoffice memos, and proposal and presentation materials. In addition, we conducted interviews with the senior managers of the organization and the representatives from the consulting firm that helped the implementation of the ERP system. Each interview lasted between 1 to 2 hours and was tape-recorded and transcribed within 24 hours after the interview. We also used an interview guide as a reminder to the interviewer of the topics to be covered, and interviewees were encouraged to expand on issues they considered important. Open-ended questions were asked based on the case study protocol to provide greater insights and reduce biasness. To ensure that the correct facts were communicated during the interviews, more specific questions, derived from the literature review, were asked when clarification was needed and paraphrasing was done whenever necessary. After the interviews, further clarifications were conducted via email and telephone conversation to ensure accuracy of interpretations.

Reliability is demonstrated by the appropriate use of case study protocol (Yin, 1994). We used the protocol to ensure that we followed the same procedures for each interview. Interviewees were informed of our research objectives at the beginning of each interview. The interviews were open-ended or semi-structured rather than focused. Also, we enhanced the reliability of this research by developing an evidence database. This database consisted of transcribed copies of the audio recordings, case study notes, manuscripts and files. It allowed us to review the evidence directly and not to be limited to written reports, thus increasing reliability of the entire case study. We increased internal validity by using the pattern matching technique suggested by Yin (Yin,

1994). This technique essentially involves qualitative but logical deduction (Lee, 1989) wherein an empirically based pattern is compared against a predicted pattern derived from the theory.

External validity establishes the domain to which a study's findings can be generalized (Yin 1994). Our study is an interpretation of a single ERP implementation in an organization. Though we gain more detailed insights from the single case design (Yin 1994), further examination of strategic renewal involving organization learning in other organizational contexts should be conducted to enhance external validity.

## **The Case**

The organization with which we conducted the case study is a large manufacturing company in China. Due to fast business expansion, the fragmented legacy information systems could not provide strong support for effective management decision-making. In addition, the coordination among business units and different sites became complicated and inefficient. Aligned with the business strategy of expanding the scope of business and automating business processes, the top management decided to implement an ERP system to integrate the systems and business processes. ERP system was perceived by the organization as an enabler of operation efficiency improvement and decision-making effectiveness enhancement, thus it provided an opportunity for deriving competitive advantages. With all sites located in the same country, the organization chose to have single site software configuration as all sites operated as a single management entity, the flows of material and finished goods were managed centrally from the headquarter and they had common business processes. After its ERP implementation, the top-management was able to make more informed and effective decisions, the company was able to respond to the market more swiftly and inventory cost and amount of bad debts was greatly reduced.

Recognizing that human resources were the critical factor for the success of the project, the organization set structures for the project, which included a steering committee, a working committee, project function groups, information technology (IT) group and consulting group. The details of these committees/groups are shown in Table 2. The Steering Committee consisted of the members of top management team, while the Working Committee consisted of senior managers who were respected and trusted in the organization. The Project Function Groups consisted of the managers and employees at the key posts of department of finance, procurement, sales, production and planning. ERP implementation in this organization was a process of interaction among individuals, these groups and committees, and the organization in which organizational learning occurred.

In addition to the formation of these groups for the ERP implementation, the organization set specific project plan, project's stage plans and weekly plans. These plans were reviewed from time to time to check whether the progress was consistent with what was planned during the whole ERP implementation process. Whenever there was any lagging-behind, the firm would try to re-allocate resources and ensure that tasks were finished on time.

The organization's business model had been function-oriented. To switch from being function-oriented to process-oriented, as required by the ERP system, the organization underwent its business process redesign as its first step of ERP implementation. After coming up with the target business processes, the organization worked together with the consulting firm and formulated a strategy that included both organizational transformation and system customization of its ERP system. Following the framework proposed by Crossan et al. (1999), we present the organization's ERP implementation by studying the exploitation and exploration in its strategic renewal.

### ***Feedback Process - Exploitation***

The exploitation undergone by this organization mainly focused on analyzing business practices before the ERP implementation, based on institutionalized organizational knowledge. The organization went through four stages to accomplish this task, i.e., collecting information about the institutionalized business practices, integrating knowledge about business practices from various business units, interpreting the current business practices and identifying the activities that required further improvement.

### **Collecting Institutionalized Knowledge**

Based on the organization's ISO9000 documents, the Project Working Committee and Project Function Groups collected information about the status quo management structure and business practices. Several members in the Project Working

Committee participated in the development of the ISO quality system. They had good knowledge about the requirement of ISO and the enterprise's status quo business processes. In addition, this organization conducted questionnaire survey with the employees to collect detailed information about business practices. The employees were required to describe the activities they performed in a written form by answering open-ended questions. Moreover, the employees were asked to write down their suggestions about further improvement of the activities related to their posts.

### **Integrating Knowledge of Business Practices**

After the institutionalized business practices information had been collected from all business units and organizational memory artifacts, Working Committee and the Function Groups worked together to integrate the information and came up with an overall picture of the organization's business practices. Such integrating process provided the opportunity for knowledge sharing among different business units and allowed the members of Function Groups to have broader understanding of how other functional departments did their jobs.

### **Interpreting Status Quo Business Practices**

With each Function Group interpreting the department's business practices to other Function Groups and the Working Committee, the organization analyzed the business processes in great detail. They learned that the current business processes were not clear enough, especially they were not good at handling exceptional cases; management mechanisms were out-dated and the coordination among business units were inefficient; there were not enough support for management decision making and the senior managers had to make decisions subjectively.

These groups further identified the processes that required improvement. Such processes included planning, procurement, production and inventory, sales and finance processes. It was decided that these processes should be simplified, standardized, clarified and share information with each other. To optimize these processes, the organization had the employees contribute their innovative ideas and seek the expertise assistance from the consulting firm.

### **Disseminating Information among Individuals**

The organization organized assemblies and workshops on essentiality of enhancing the efficiency of current business processes. These gatherings made the employees aware of the problems with the current business practices and understand the necessity of improving business processes. Moreover, the exploitation learning affected the cognitive maps of the employees and allowed them to developed innovative ideas, since they were familiar with the organization's business practices and knew about where the problems were.

### **Feed Forward Process - Exploration**

#### **Intuiting**

Based on their experiences with the organization, members of Function Groups and Working Committee generated novel and innovative ideas about further improvement of business processes intuitively. These ideas were mainly about how to better integrate the business processes across functional departments, how to simplify and eliminate unnecessary parts of the business processes, how to deal with those processes spanning the departmental boundaries and how to use control mechanisms to ensure smooth and accurate flows of information across the organization. In addition, the Consulting Group worked on the embedded business processes of the ERP system and provided the organization information what the system offered.

#### **Interpreting**

To facilitate the communication of ideas about business process improvement among all group members, the Consulting Group offered training to the other group/committee members. Such training taught the members how to describe business processes verbally and how to draw business process diagrams to present their ideas. In addition, the members were trained to tackle business problems from a process-oriented perspective. Equipped with process-oriented knowledge, each Function Group

discussed their innovative ideas within group and drew a diagram of the ideal business process of their department. In the meetings involving all function groups, all these ideal business processes were articulated and interpreted openly. Moreover, those innovative ideas about the business processes spanning departmental boundaries were discussed in depth and the presenters were required to share their thinking behind these ideas. To facilitate the development of a sense of shared understanding, all presenters used the same set of notations to draw business process diagrams and used the same language to explain their novel ideas.

### **Integrating**

With all these dialogues and conversations about business process improvement, the groups integrated the innovative ideas and generated shared understanding that was not just the sum of these novel ideas but an expansion and new definition of the organization's business processes. During this sub-process of organizational learning, the most challenging task was getting consensus among different departments about how to achieve a single-point of data entry. Issues such as when and who should enter various kinds of data into the ERP system were critical for the accuracy and timeliness of the common database shared across the organization. Nevertheless, it could affect the interests of relative business units. Hence, it required business units to reach shared understanding and get the problems solved from a globally optimal perspective. Conflicts that could not be resolved by the Working Committee were handed over to the Steering committee. If the Steering Committee could not judge which conflicting proposal to choose, based on their experiences and expertise, they would have them subject to experiments.

Striking a balance of adaptation to the ERP system and customization of the ERP system was another main subject for this sub-process of integrating. The processes embedded in the ERP software were different from the ideal business processes suggested by the groups. The Consulting Group explained clearly about the pros and cons of customizing the ERP system. Though customization of the ERP software with the development of add-ons allowed the organization to perform business as it wished, such customization could affect every module of the ERP system as they were tightly linked together. In addition, the future upgrading of the ERP package would be a nightmare as the organization would have to do the customization all over again in the new version. Taking the suggestion of the Consulting Group, the organization worked closely with the consultants on making the ERP system support as much of the ideal core business process as possible by smartly using the system's functions and setting parameters. In the case that the ERP system itself could not support parts of the process and these activities were important for the organization, such as the activities that provided great production cost saving, the Consultant Group and the IT Group were required to undergo add-ons development. For the cases that the activities were not critical for the organization's operation and supporting them required extra efforts other than configuration, the organization decided to adapt to those embedded in the ERP system.

The partnership between the organization and the Consulting Group was one of mutual trust, shared values and mutual benefits. Both parties were open-minded and willing to take the other's perspective in solving problems. Such a partnership allowed them to cooperate with each other effectively. Based on their experiences gained from working with other clients and their understanding of the organization's ideal business process, the Consulting Group provided a system implementation plan with those design plans, incorporating the lessons they learned from other projects (Other major tasks performed by the Consulting Group is shown in Table 2). The implementation plan was studied and amended by both parties until it was satisfactory to both sides.

### **Institutionalizing**

The outcomes of the integrating sub-process were a set of new business rules, decisions to restructure organization, new job specifications and how the ERP system should be configured. Based on the relevance of business sub-units' operation, the organization changed its organization structure and set up a business operation center. This operation center had the divisions of procurement, business order (was in sales department before the restructuring), production planning, and material control (was in production department before the restructuring) since these four divisions were along the supply chain and thus highly related with each other. Such restructure optimized business processes and made the implementation of ERP system smoother. In addition, the work distribution was changed among the senior managers, based on the streamlined business processes following the ERP implementation. The job specifications of the line workers were also changed due to the ERP implementation and employees were redeployed. After configuring the system and having the streamlined business processes embedded in the ERP system, the Consulting Group and the IT Group worked together and organized training courses to the Function Group members and end users. By learning the operation of the ERP system, the employees got familiar with the new business processes.

### **Factors Facilitating the Process**

The outcomes of exploitation learning created a crisis for the organization. They made people know that the status quo business practices were no longer valid for the changing business environment and organizational transformation and business process reengineering were necessary. Such understanding among the employees reduced the resistance to changes and gave incentives for employees to generate intuitive innovative ideas. In addition, the consultants provided the organization knowledge of the allegedly best practices embedded in the system. Such knowledge stimulated the Function Group members to think innovatively. Moreover, managers' contribution to the ERP implementation project accounted for as high as 60% of their annual performance assessment. The organization policy encouraged individuals to develop novel and innovative suggestions for the ERP implementation and business process optimization.

In interpreting sub-process of organizational learning, the mastery of business process knowledge and process-oriented thinking techniques enabled the Function Group members to articulate their ideas in a commonly understandable language. The language allowed the individuals/groups to develop their cognitive maps of the business processes since it enabled them to name and begin to explain what were once simply feelings, hunches and sensations. Once the individuals/groups could name things, they could make more explicit connections among the objects in the business process. In addition, the language facilitated the individuals/groups to develop a sense of shared understanding. The environment in which the individuals were might affect their cognitive maps so the meaning of a term about a business process could be different among individuals. By expressing their ideas in terms that their colleagues understand helped reduce the equivocality.

The flat administrative structure of the ERP implementation project played a pivotal role in enabling individuals/groups to share knowledge and information openly and freely. The individuals/groups that used to work in hierarchical isolation had to converse and work side by side at the operational level to integrate their diverse knowledge into a blueprint of the organization's effective and efficient business processes. This required the colleagues to share their information and knowledge with each other. In so doing, knowledge overlapped and it facilitated a deeper understanding of the problems facing the organization. Triggers of innovative solutions were set off through the process of integrating. In addition, shared knowledge made groups understand how others performed their jobs and helped them understand the mindsets of other business units. Such understanding facilitated the development of a collective mind, which made the groups willing to undergo mutual adjustment, even sacrificing the interests of a single department for that good of the whole organization. The productive and effective coordination and discussion were critical for integrating different meanings of the business process and coming up with an agreed course of action.

Top management support was critical for this ERP implementation project, just as what is suggested by the extant literature. But the support and involvement of top management seemed to be especially important for the institutionalizing of what the organization had learned in this case (Its major tasks are shown in Table 2). The results of implementing ERP in this organization was not just installing the system and making the employees use it, but it triggered the organization's restructuring and business process reengineering. Without the commitment from the top management team, it was impossible to achieve such changes within the organization.

### **Discussion and Conclusion**

This paper has attempted to shed new light on the ERP implementation in China by taking it as a strategic renewal process of Chinese organizations. ERP implementation in China is difficult to manage due to two main reasons. First of all, ERP systems enable the organization to integrate all important business functions through common-shared database. It requires units of organization to change their mindsets and operations, embracing the idea of sharing information across the organization. This is a great challenge to Chinese organizations that are reluctant to changes and tend to treat knowledge as individual asset. Secondly, as large off-the-shelf software, an ERP system provides integrated business and software systems to a customer. The reusable best business practices encapsulated in the system fit the western organizational structures and they are not readily usable for the function-oriented Chinese business models. However, customization of the system is expensive and risky, since it can affect the functionality and future upgrading of the system. Hence, Chinese organizations must resolve the tension between adaptation to and customization of the ERP system when they are implementing such ERP systems.

**Table 2. Steering Committee, Consulting Group and IT Group in this Project**

Group	People	Major Tasks
Project Steering Committee	General manager, executive vice general manager, VPs of five important departments and the chief consultant from the consulting firm	<ul style="list-style-type: none"> <li>• Formulated strategies and guided the working committee</li> <li>• Set specific project target, scope and evaluation measurement</li> <li>• Approved project plans and supervised the project progress</li> <li>• Made final decisions on organizational transformation and new business process</li> </ul>
Consulting Group	Consultants with expertise in ERP from the consulting firm	<ul style="list-style-type: none"> <li>• Moderated the management of the project and provided training courses</li> <li>• Facilitated the investigation, analysis and optimization of business processes</li> <li>• Formulated the implementation plan and configured the ERP system</li> <li>• Developed add-ons so that ERP system could meet the special requirements of the organization</li> <li>• Provided consultation to committees/groups.</li> </ul>
IT Group	Employees in IT department	<ul style="list-style-type: none"> <li>• Coordinated the investigation and optimization of business processes</li> <li>• Promoted the training of employees</li> <li>• Was in charge of data preparation and ensure the accuracy, completeness and timeliness of data in the ERP system</li> <li>• Got familiarized with the ERP system and maintained the system after its implementation</li> </ul>

We have argued that ERP implementation, as a window of opportunity for organizational strategic renewal, is a complex learning process in which managing exploitation and exploration learning is critical. The organization we conducted case study with attributed its ERP implementation success to its organizational learning management. While exploring the possible transformation of its organizational structure and streamlining its business processes by importing external knowledge of consultants, the organization had its senior managers, mid-level managers and employees at key posts involved in the redesign of business processes. They developed innovative ideas to further improve the status quo business practices and exploited the knowledge that had been accumulated. Thus the organization maintained the continuity with the past and present. With the preservation of some elements of the past, the individuals and groups would not have the anxiety of identity change and resisted the strategic renewal (Brown & Starkey, 2000).

The present work has clear implications for practice. First of all, exploration learning depends on the intensity of the efforts the individuals made at learning. As motivation is one of the most important factors affect the intensity of efforts, articulating the vision clearly and having the employees accept the fact that the ERP system is the solution to resolve the crisis is important to bring people together to support the implementation project and contribute their novel ideas. In addition, removing the downside risks of exploration learning is more effective than providing rich rewards. Also, shared values in organizational culture can also encourage or discourage learning. As argued by Levinthal and March (1993) (p. 108), successful learning organizations build a “can do” attitude so that the individuals and groups are motivated to experiment with new ideas and take risks in doing so.

Secondly, consistent with what was found by Argyris and Schon (1978), learning systems, such as organizational structures and behavior, provide a framework for further problem-solving inquiry and learning. The core teams of multi-discipline are critical to guide ERP implementation. They act as coaches to inspire confidence in all members of the organization and ensure diverse voices are heard in crucial decision-making. Having people that know the organization business well and having people who have expertise about ERP systems are both important for the organization to strike a balance between organizational transformation and system customization. Also, the forums for discussion and debate, the formal and informal workshops for employees’ interaction with each other guide individuals’ inquiry into problem solving.

Thirdly, as ERP systems integrate the business functions of the whole organization and take a long period to get implemented, expertise from the consulting firm is important for the implementing organization. In addition to providing the organization ERP module training, the consulting firm can facilitate the organization’s change management by providing generic knowledge of ERP and helping the individuals to master process-oriented thinking techniques. The cooperation between the consulting firm and the organization is critical for the smooth carrying out of the project.

From a theoretical perspective, the primary contribution of this work is to provide a new perspective of studying ERP implementation. It complements the conventional normative literature in ERP implementation by drawing attention to the problematic nature of the exploitation/exploration learning process, emphasizing the truism that merely listing the critical success factors and implementation stages will not ensure the learning to occur. While the present study does not provide a complete account of ERP implementation, nonetheless, we believe that many ERP failures are because of the bad management of organizational learning. Thus the present framework has considerable worth and relevance.

In general, the paper highlights the need for further research on the strategic management of learning process in ERP implementation. A comparative study of successful and unsuccessful cases of ERP implementation can provide us more insights into organizational learning during such strategic renewal process. Also, national culture can be a factor that affects the effectiveness of mechanisms discussed in this paper. A study that compares cases of ERP implementation in different national culture contexts helps us understand what encouraging mechanisms are appropriate for different cultures.

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