S1-5

CULTURAL IMPACT ON KNOWLEDGE MANAGEMENT PROCESS AFFECTING PROJECT MANAGEMENT PRACTICE

Eric Wai-Leung Chan [1]

[1] DPM Candidate, RMIT University, Melbourne, Australia
MRICS, AAIQS, HKIS, MCIOB, MBA
Correspond to eric.wl.chan@hotmail.com

ABSTRACT: Knowledge management (KM) is one of the useful management tools in today's project management (PM) practice, such as construction projects. Nobody can deny the importance of "useful knowledge" always helps organizations and project managers shaping a decision.

Due to the trend of globalization, it is now very common that an organization may comprise employees from different countries of distinct national-cultures working together. It is also not uncommon that different projects, within an organization, may have their own organizational-cultures which influence its knowledge repository, transfer process and knowledge strategy. Therefore, it is extremely difficult to align all these cultures and consolidate them to benefit the KM process and PM practice.

Organizations and project managers understand that different national-cultural and organizational-cultural factors will create impact on the philosophy of KM process which will subsequently affect PM practice. Those factors may affect interpersonal relations and exchange of knowledge between projects and amongst staff. Systematic KM process can utilize the goodness of different employees from distinct cultures which can eventually drive the organization and projects to success. The purpose of this paper, based upon a case study of a Hong Kong construction company, is to discuss how those cultural factors are linked to KM and what organization and project managers can do to improve the KM process and PM practice.

Keywords: Culture, Project Management, Knowledge Management, Construction Management, Enterprise Resources Planning

1. INTRODUCTION

According to Grisham (2006), global markets are increasingly taking advantage of the strength and economic advantages of a diverse global workforce. It is common on international projects to engage multi-cultural teams. The situation of English Premier League (EPL), which is one of the famous and traditional soccer leagues in the world, can be borrowed as an illustration. The blooming development of EPL outshines other leagues in the past ten years. When those participating teams wish to be meddled in the EPL, the tycoons will spend thousands of millions pound sterling to invite "stars" from every corners of the world and form the "dream team". Therefore, it is not surprisingly that the best team may comprise footballers from different countries. For example, the regular players in the squad of one of the leading team Chelsea in 2008-2009 season, includes those from not less than night countries: Czech, Portugal, Germany, France, Brazil, Ghana, Nigeria, England and Côte d'Ivoire. The style of these footballers from Europe, Africa and South America is different. The Netherland manager of the team must not only coach those stars from different styles to benefit Chelsea, but also align and formulate the winning strategy in each game. This strategy must best blend their talents and merits in a harmony team environment. Communicate effectively among different national cultures and build up the team culture are therefore the keys to success.

Likewise, it is equally important for construction companies/projects to blend different staff and people from different national cultures by a right approach. Then, a highly regarded organizational culture can be developed to win in the business battlefield. Efficient information flow and effective communication amongst different parts within the organization/project with different personnel of distinct cultures is thus becoming the prime factor in the management agenda. However, it relies very much on a good KM process.

Hong Kong is a city of multi-cultures; comprise immigrants from different countries of distinct cultures working together. Good PM skills to utilize the goodness of these employees from distinct cultures can drive the organization to success. Methods, rules and procedures in managing cultures are therefore the important organizational goals for strategy formulation, e.g. KM process.

The purpose of this paper is try to discuss how cultural factors are linked to KM and PM, and what organization and project managers can do to improve the KM process and PM practice. In the following context, the background of case study is firstly discussed. These include the sub-sections for the rationale behind the choice of the research methodology and context of the case study. This is followed by the theoretical analysis and discussions of the case study. In order to study in depth of the KM process pertained to cultures, dimensions of various national cultures are depicted. Further discussion also includes how to address critical organizational-cultural factors. More specifically, an investigation of the studied construction company is done to demonstrate how those factors affected the methods, rules and procedures to enable good information flow and communication. These comprise the importance of creating a knowledge sharing environment, providing organizational support and formulating the process for knowledge transfer.

2. BACKGROUND OF CASE STUDY

A successful research cannot proceed without two essential elements: research methodology and the understanding of research background. Therefore, these elements are discussed at this outset.

2.1 Research Methodology

Past research has shown that due to the complexity of the issues involved, case study research is a very useful approach. According to Yin (1994), case study has been a common research methodology in organizational and management studies. Other authors (Silverman 1985; Werner and Schoepfle 1987) also advocated the value of this methodology, because it can serve to present detailed accounts of organizational practices, penetrate the cultural perceptions and understandings of organizational actors, and interpret management practices in their institutional and organizational contexts.

As this study is about management studies, PM practice and cultural issues as well as organizational context, using case study methodology therefore fits the purpose.

Case study researchers can use many methods to collect data which include questionnaire, interview, observation, and secondary data (Neuman and Kreuger 2003). In this study, data was collected by means of informal interviews, observations, projects' archives and personal files.

2.2 Context of the Case Study

As one of the leading construction companies in Asia, the studied organization (Company-HK)'s activities span the entire spectrum of building, civil engineering, foundation work, electrical and mechanical works as well as construction services. This construction organization is now 51 years old and employs some 2,000 full-time staff, about 25% is expatriates from Australia, Europe, USA, Southeast Asia and China (PRC) of different national cultures. Company-HK has been building a wide range of construction projects in Asia and is one of the market's leaders in Hong Kong. The organization's headquarters are in Hong Kong and it operates throughout the region. There were working offices in Shanghai, Beijing, Shenzhen, Taipei, Singapore, Macau, Bangkok, Hanoi and Pesaka.

These different regional offices contained staff with different cultural background. They run projects over different countries and require different professions from various countries to contribute different technical skills to the increasingly complicated projects. Therefore, it provides a good opportunity to study how cultural impact has been showcased on the formulation of KM process.

3. THEORECTICAL ANALYSIS AND DISCUSSION OF CASE STUDY

In order to gain new insights, researchers must always re-visit and re-study old theories and researches built-up by other academics. This section therefore introduces past research and relevant theories that are related to this study.

3.1 Dimensions of Various National Cultures

People join the organization from different cultures. Therefore, in order to study organizational cultures; it should be unfolded from national cultures.

Culture has many meanings and these have changed over the past few generations. Bodley (2000) stated that culture involves what people think, what they do, and what they produce. Culture has several properties: it is social heritage or tradition; it is shared, learned human behavior; and it is symbolic and based on shared, assigned meanings of the members of a group. Schein (2004) said that culture is a pattern of shared assumptions, invented, discovered and shared by a given group as it learns to cope with its problems of external adaptation and internal integration, that has worked well enough to be valid, and, therefore is to be taught to new members of the group as the correct way to perceive, think and feel in relation to those problems.

Cultural differences between nations are recognized by (Hofstede) 1994; he categorized it into five dimensions of national-cultural differences: power distance, uncertainty avoidance, individualism, masculinity and long-term orientation. Power distance is the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally. The measure is from the subordinates' perspective and provides information concerning dependence relationship. The larger the index, the larger is the dependence. Uncertainty avoidance is the extent to which members of a culture feel threatened by uncertain or unknown situations. The measure is the degree of uncertainty avoidance from weak to strong. The higher the index, the stronger is the tendency. Individualism stands for a society in which the ties between individuals are loose: everyone is expected to look after himself or herself and his or her immediate family only. The opposite of individualism is collectivism. Collectivists, from birth onwards, are integrated into strong, cohesive ingroups, which throughout his or her lifetime continue to protect him or her in exchange for unquestioning loyalty. Masculinity pertains to social gender roles that are clearly distinct: men are supposed to be assertive, thorough and focused on material success; women are supposed to be more modest, tender, and concerned with quality of life. Femininity is the opposite of masculinity and it stands for a society in which social gender roles overlap: both men and women are supposed to be modest, tender and concerned with quality of life. The fifth dimension is long-term orientation and labeled as "Confucian dynamism" which was developed by questioning Chinese scientists; it captures the extent to which people have a future-oriented perspective rather than a focus on the present.

In every culture, such phenomena as authority, bureaucracy, creativity, good fellowship, verification and accountability are experienced in different ways. Managers must operate on a number of different premises at any one time. These premises arise from their cultural origin, the culture in which they are working, and the culture of the organization which employs them. For example, pay-for-performance has in many instances been a failure on the African continent because there are particular, though unspoken, rules about the sequences and timing of rewards and promotions. However, it has worked well in the cultures of the USA, Netherlands and UK. In more collectivist cultures, like many Asian countries, it may not be so successful (House, Javidan *et al.* 2002). Employees may not accept that individual members of the group should excel in a way that reveals the shortcomings of other members.

3.2 Critical Organizational-Cultural Factors

There is a close relationship between national cultures and organizational cultures because organization is made up of employees who came from different cultures evolved from different backgrounds. Hofstede (1994) concluded that at the organizational level, cultural differences reside mostly in practices, less in values. An occupational culture level has been placed halfway between nation and organization, suggesting that entering an occupational field means the acquisition of both values and practices. Therefore, national culture is inextricably link to organizational culture.

There is no standard definition of organizational culture but Hofstede (1994) summarized it as follows,

- holistic referring to a whole which is more than the sum of its parts;
- historically determined reflecting the history of the organization;
- related to the things anthropologists study like rituals and symbols;
- socially constructed created and preserved by the group of people who together form the organization;
- soft;
- difficult to change.

Peters and Waterman (2004) studied sixty-two companies and reported in their book "In Search of Excellence: Lessons from America's Best-Run Companies. The authors concluded that the attitude towards strong organizational cultures is partly affected by national culture elements. Without exception, the dominance and coherence of culture proved to be an essential quality of the excellent companies. Organizations with "strong" cultures generally arouse positive feelings. Therefore, the stronger the culture and the more it was directed toward the marketplace.

Organizations live with the increasing pressures of internationalization and globalization; they should therefore strive to build an organization that accommodates cross-cultural management practices. The implementation of an inter-cultural management development model can make a sound contribution to improving management practices in an international environment Moreover, considering the subtle influence of culture on management behavior; organizations should significantly increase the level of inter-cultural management to both local and expatriate staff.

Many cultures reveal the importance of cultural background, upbringing, and heritage and their impact on our behaviors. Many of our behaviors as adults are not only shaped by culture but also draw their meaning from culture. Recognizing the important contributions of culture to actions, behaviors, and the reasons behind them helps to understand, respect, and appreciate those

differences. Matsumoto (2004) discussed that improving the understanding of ethnocentrism and stereotypes, and their contribution to prejudice and discrimination is extremely important in today wor1d. Organizations need to search their own culture to discover the reasons these stereotypes have persisted and how their own culture maybe fostered or facilitated by their maintenance. By recognizing group and individual difference and by acknowledging rather than ignoring their influences within the organization, organizations are free to allow themselves to engage with people on a common ground rather than prejudging their actions, behaviors, and reasons via stereotypes based entirely on our ground or theirs. Berrell, Wright *et al.* (1999) in their study found that members from different cultural groups often feel squeezed between different ways of managing the workplace. The external social, cultural and political environment shape the internal structure of the companies, as from within the ways of culture produced an environment in which scepticism and apprehension sometimes infiltrated management practices. The business world, however, is no longer constrained by national boundaries, and international managers must be constantly aware of the influence of culture on management behavior.

Contribution from employees come from different national cultures is critical to the organizational culture. There is a Chinese idiom "同舟共濟 (*tóng zhōu gòng jì*)"which means when people are crossing a river in the same boat and are caught by a storm, they will come to each other's assistance just as the left hand helps the right. There is also an English idiom -"In the same boat" means that people who must work as a team because they are facing the same challenges together and must cooperate in order to succeed. All employees have their own stakes in the organization and they may have valuable knowledge to help the organization to succeed. From different cultural background, they may use different method to accumulate, reuse and communicate their knowledge with others, however. This knowledge may be tacit and sticky to be managed. Therefore, it is important to provide an effective platform for them to manage the knowledge and communicate efficiently. This becomes the basic concept of the KM process in the PM practice.

In order to streamline its internal process, Company-HK introduced the whole communication infrastructure in an Enterprise Resource Planning (ERP)[1] system as the KM backbone since December 2002. Using an ERP system for KM process has been studied by Nah (2002) and Huang, Newell *et al.* (2004), and was concluded being worthwhile. An ERP system is not a KM system *per se*, but a tool to reduce management effort in gathering, storing and using data or information. It is also very useful in analyzing and contextualizing information and refining it into useful knowledge (Chan, Mills *et al.* 2009). Since ERP system embodies context and thus embeds some of the tacit knowledge relating to hypothesized causal links and important work practice-specific cultural factors that may shape a decision.

In designing an ERP system for KM, organizational culture factor is one of the major concerns and will be discussed in next sub-section.

3.3 Organizational-Cultural Factors Affecting Communication

The communication style of different cultures within the organization is different. Gudykunst, Matsumoto *et al.* (1996) researched the impacts of "Individualism-Collectivism" on communication styles and indirect effect that is mediated through self construals and values find that individualism and collectivism exist in all cultures. Members of individualistic cultures learn some collectivistic values and acquire views of themselves as interconnected with others, and members of collectivistic cultures learn some individualistic values and acquire views of themselves as unique persons. The cultural individualism-collectivism has a direct effect on communication because it affects the norms and rules that guide behavior in individualistic and collectivistic cultures. Individuals learn their values through the socialization process. The values that are predominant in the culture influence the values that individuals learn, but individual value structures are different from cultural value structures. According to Triandis (1995), individualistic cultures emphasize the goals of the individual over group goals, whereas collectivistic cultures stress group goals over individual goals. Gudykunst, Matsumoto *et al.* (1996) stated that in individualistic cultures, individuals tend to assume responsibility only for themselves and their immediate family; in collectivistic cultures, individuals tend to belong to in-groups that look after them in exchange for the individuals' loyalty which in-groups are "groups of people about whose welfare one is concerned, with whom is willing to cooperate without demanding equitable returns, and separation from whom leads to discomfort or even pain".

Irwin (1996) pointed out that the importance of face and face saving to explain the common practice across many Asians cultures of using intermediaries or third parties in both personal and business dealings. While third parties act as protectors of face, they often slow down interactions in ways that are frustrating for "outsiders" not aware of, and experienced with, this type of interaction and the reasons for it. In organizations

[1] Al-Mashari *et al.*, (2003) described an ERP system as customised standard integrated software applications that facilitate IT coordination in control aspects of management and other operational facets.

everything management does communicates, some organizations send strong, consistent messages that are readily grasped by employees. Other organizations are less easy to interpret; they do not communicate clearly, or their messages are incongruent. Some time one part of the organization communicates one thing and another part receive something else. The cues around which these organizational and cultural messages are organized are as different as the languages with which they are associated. Most important, their meaning is deeply imbedded and therefore harder for management to change when making transition from one to another. Hall and Hall (1990) professed that each cultural world operates according to its internal dynamic, its own principles, and its own laws – written and unwritten. The requirement and adequacy of information in a communication process is described as high- and low-context. According to Hall (1988), low-context communication involves the use of explicit and direct messages in which meanings are contained mainly in the transmitted messages. High-context communication, in contrast, involves the use of implicit and indirect messages in which meanings are embedded in the person or in the socio-cultural context. For example, communicating with German, they are low-context and will need lots of information and all the details in depth. However, Frances are high-context and will not require as much as information (Hall and Hall 1990). Gudykunst, Ting-Toomey *et al.* (1988) contended that low-context communication is used predominantly in individualistic cultures, whereas high-context communication is used predominantly in collectivistic cultures. Gudykunst, Matsumoto *et al.* (1996) concluded the eight dimensions of low-context communication and high-context communication styles: the first dimension focuses on respondents' perceived ability to infer the others' intentions, needs, and feelings; the second dimension focuses on using indirect communication; the third dimension involves interpersonal sensitivity in communicating with others; the fourth dimension focuses on the use of dramatic communication; the fifth dimension focuses on the use of feelings as a base to guide behavior; the sixth dimension deals with openness in conversations, and it is related to disclosing person-based information; the seventh dimension focuses on precise communication and the eighth dimension deals with respondents' positive perceptions of conversational silences. These dimensions should be included in the KM process.

There is strong relationship between culture and KM; Gulati (1996) concluded that the obstacles to knowledge transfer within an organization created by distance, cultural differences, and other factors. Therefore, after the critical organizational-cultural factor is discussed, the KM system can be designed.

3.4 Importance of KM System

Owen and Burstein (2005) studied the effect of KM integrates with PM and explored how an engineering company creates, manages, and reuses knowledge within its projects. They argued that the organizational-culture encourages a reliance on formal and informal of knowledge transfer. In fact, KM is now recognized as a major business concern and intellectual assets which plays a vital role in gaining a competitive advantage. Within the architecture, engineering and construction industries, where the need for innovation and improved business performance requires the effective deployment and utilization of project knowledge, the need for strategic knowledge management is being acknowledged (Kamara, Augenbroe *et al.* 2002). According to Walker (2004), an organization's knowledge advantage is its capacity to liberate latent creativity and innovation potential through effective management of knowledge both from within its organizational boundaries and its external environment. Therefore, KM in today's organization is important and especially relevant to construction organization (Kamara, Augenbroe *et al.* 2002).

As far as KM is concerned, Dixon (2000) identified five different types of knowledge transfer situations called serial transfer, near transfer, far transfer, strategic transfer, and expert transfer. In addition, an effective management calls for reuse of the organizational knowledge. Markus (2001) stated that knowledge creation is often viewed as somehow more important and more difficult to manage. However, the effective reuse of knowledge is arguably a more frequent organizational concern and one that is clearly related to organizational effectiveness.

Each type of knowledge reuser has different requirements for knowledge repositories. Some people hold that knowledge repositories play a relatively unimportant role in knowledge reuse, arguing that face-to-face communication and good knowledge sharing processes between the sources and intended recipients of knowledge are the keys to successful knowledge reuse. KM differentiated by the "knowledge distance" between those who have the knowledge and those who don't, and second, to outline what needs to be done to make repositories useful for the different types of knowledge reusers. Markus (2001) also stated that there are generally four types of knowledge reuse situations involving different knowledge reusers: shared work producers, shared work practitioners, expertise-seeking novices, and secondary knowledge miners. The role of repositories in knowledge reuse is to meet the users' need. Knowledge producers, who are frequently expected to produce high quality repositories, often lack both the motivation and the resources to do so. Therefore, successful knowledge reuse requires providing proper incentives to the knowledge producers and shifting some of the burden of

packaging and disseminating knowledge onto intermediaries. The quality and contents of their knowledge repositories are important factors in the success of knowledge reuse. First, the records knowledge producers make purposely for their own use are not likely to meet the needs of others. Second, the records knowledge producers make for others may not meet their own needs, and therefore, they may not have adequate incentives to produce quality documents that meet the needs of others.

3.5 Knowledge Sharing Environment

Argyle, Furnham *et al.* (1981) implied that one of the situational factors affecting cross-cultural communication is "environmental setting". Therefore, an effective and good KM system requires a knowledge sharing environment. Organization must maintain the vehicles for capturing the data and then disseminating the data to the various stakeholders, it takes a strong organizational culture to learn from mistakes without retribution to the employees. The study by (Kerzner 2003) about "Project Management Information Systems" (PMIS) can be borrowed to demonstrate the importance of the essentiality of a sharing environment and maintain the PM intellectual property within the organization. PMIS include four sub-information systems: firstly, the earned value information system either captures or calculates the planned and actual value of the work, the actual costs, cost and schedule variances, estimated cost at completion, estimated time at completion, percent complete, and trends. Secondly, the risk management information system stores and allows retrieval of risk-related data, and it provides data for creating reports and serves as the repository all current and historical information related to project risk. Thirdly, the performance failure information system identifies the causes of the failure and possibly recommendations for the removal of the causes which could be identified as coming from problems entirely internal to the organization or from the interactions with external. Fourthly, the lessons-learned information system while the project office was acted as an organizational center for control of PM intellectual property. As this was a necessity as the magnitude of PM information grew almost exponentially throughout the organization, the author satisfied that the project office may simply function as the records keeper to standardize a single companywide format and database for reporting the results of each project and form a part of the lessons-learned review at the end of each project. The project office has the responsibility for maintaining all intellectual property related to PM and to actively support corporate strategic planning. The intellectual property from projects is retained in a centralized location. Therefore, it is imperative that both good and bad news be recorded in the postmortem pyramid. Success and failure information would be exchanged resulting in the planning of critical resources.

3.6 Organizational Support

Organizational support and KM system are inter-related. Zack (1999) stated that KM is required to be firmly associated with the organizations business strategy. However, there is always too much attention is given to the hardware and too little to the software aspects of disseminations. Turner (1999) asserted that new communications technologies are powerful tools but managers frequently fail to live up to their promise. The key lesson is not to fall into trap of believing that e-mail, electronic and video conferencing, groupware and other technologies get people communicating. The personal relationship and networks need to be built in part first, and then the technologies can help dramatically to develop these networks further. Get the basic hardware in place at beginning and supplement these with necessary software where the key is the support by the organization.

There also exist the sub-organizational cultures. McDermott and O'Dell (2001) stated that culture is often seen as the key inhibitor of effective knowledge sharing. Culture is rooted in the organization's core values. Following this definition, in an organization with a knowledge sharing culture, people would share ideas and insights because they see it as natural, rather than something they are forced to do. However, there are always sub-cultures, sometimes simply different from the organization as a whole, sometimes in opposition to it. The most obvious place to begin understanding an organization's culture is to read the espoused values, philosophy and mission. Therefore, KM must administrate to fit their cultures, because culture does play an important role in the success of a KM effort. McDermott and O'Dell (2001) also found out other examples where well designed KM tools and processes failed because people believed they were already sharing well enough, that senior managers did not really support it. Organizations that successfully implement KM do not try to change their culture to fit their KM approach. They build their KM process to fit their culture because there is a visible link between sharing knowledge and solving practical business problems. The approach, tools and structures to support knowledge sharing should be supported by the overall style of the organization. Sharing knowledge is tightly linked to the organizational support and networks for sharing knowledge build on existing networks people use in their daily work.

3.7 Strategy Formulation

Based upon the above discussions, there are various issues arose in formulating KM process associated with cultural factors: benefit of KM affecting decision, different types knowledge affecting categories of repository and the voluminous of repository and cultural difference affecting the method of knowledge transfer. These issues are discussed as below:

Benefit of KM: Organization discovers that there is too much information being generated to be captured and that much of the information is likely to have only transient utility. Thus, even in situations where knowledge producers are making records for their own reuse, the costs of producing a high quality repository may be too high. Markus (2001) stated that when the knowledge producers are building repositories for use by others, the costs of creating documents and indexing them for reuse escalate. In ensuring successful knowledge reuse need to play close attention to the costs involved in creating good repositories; the incentives knowledge producers have to contribute to repositories for use by others, and they need for, and roles of, human and technical intermediaries in the "re-purposing" of repositories developed by knowledge producers to make them appropriate for use by others and in facilitating other aspects of reuse. Many scholars express satisfaction with virtual use of information and communication technology (ICT) tools in communication through different departments have close relationship with different cultures (Kumar and Hillegersberg 2000; Kambayashi and Scarbrough 2001). Markus (2001) pointed out that one of the key themes in KM today is the role of information technology (IT) in the transfer of knowledge between those who have it and those who do not.

CIRC (2001) advised that IT will help to improve efficiency of Hong Kong construction industry through better information flow among project participants. Yusuf and Osman (2008) has recently also examined the IT diffusion in Malaysian construction industry and concluded that there was a rapid change of ICT manipulation in the industry and the state of use of IT applications was also gradually increasing.

Peansupap (2004) in his thesis stated clearly and deeply that ICT introduces opportunities for improving communication to improve many construction processes at each project phase. Thus, perceived ICT benefits have motivated numerous construction organizations to adopt and invest in this technology. First, ICT can support information integration and this in turn can help to reduce the volume of information processed and reduce data re-entry by transferring information internet/intranet protocols. Second, ICT can enhance collaboration by supporting communication among project members and sharing information and documents, especially when team members are located in different geographical areas. Third, ICT support e-commerce and create opportunities to extend business or provide customer service. Another aspect of ICT benefits focuses on applications that support improving construction processes. In summary, the benefits of ICT use in construction can be from the strategy view that ICT innovation is perceived as providing a key competitive advantage; and from a construction operational view that ICT help to enhance communication and manage information construction processes.

For example, the use of Electronic Document Management System can not only speed up information and document transfer, but it also helps information and document repository. E-procurement and e-commerce system minimize printing and advertising costs, and also increase the current pool of available bidders leading to better competition. This in turn may result in a more competitive bid price.

Categories of repository: The benefit of ICT to KM is obvious and worth to invest, but when the KM process for communication is formulated, cultural issues about repository must also be considered. (Mowery and Silverman 1996)'s research revealed that USA organizations' alliances with non-USA organizations seem to result in lower levels of inter-organization knowledge transfer than those involving only USA companies. It shows that people from different cultures affecting the result of knowledge transfer because their results demonstrated that the less forbidding barriers of culture, language, educational background, and distance associated with domestic alliances should result in higher levels of knowledge transfer. Therefore, when communicating between different cultures, Larry and Richard (2004) suggested developing empathy, being aware of cultural differences in listening, encouraging feedback, developing communication flexibility, learning to tolerate ambiguity, learning to manage conflict, and learning about cultural adaptation. Developing empathy is to understand empathy and avoid hindrances to empathy; improving empathy is pay attention, communicate empathy, use culturally accepted behaviors and avoid ethnocentric responses; be aware of cultural differences in listening is the most important ingredients embedded in communication components; encourage feedback and develop communication flexibility will allow people to respond to various conditions, people, and situations. Lastly, learn to tolerate ambiguity and learn to manage conflict are based upon learning about cultural adaptation: language, disequilibrium, host culture

Sackmann (1992) pointed out that there are four different kinds of cultural knowledge which can be differentiated and labeled as dictionary knowledge, directory knowledge, recipe knowledge, and axiomatic knowledge. Dictionary knowledge comprises commonly held descriptions, including labels and sets of words or definitions that are used in a particular organization. Directory knowledge refers to commonly held practices. Directory knowledge delineates the "how" of things and events, their processes, such as how a specific problem is solved in a given organization or what people actually does to be promoted. Recipe knowledge, based on

judgments, refers to prescriptions for repair and improvement strategies. It expresses "should" and recommends certain actions. It is related to norms. Axiomatic knowledge refers to reasons and explanations of the final causes perceived to underlie a particular event. It is about the "why" things and events happen, why a particular problem emerged, or why people are promoted in a given organization. In addition, there are also different across divisions' functional domains enacted differently by the members of different divisions: production groupings, managerial marketing and managerial sales groupings; coordination grouping. Therefore, there are potential existence and formation of subcultures in organizations. Given that organizations are purposive, the manifestations of ideas in practices are important. Comparing expressed ideas and actual practices as perceived by others can provide valuable information about the world view of organizational members and its degree of overlap with reality as perceived or experienced by others. All three divisions had a strong divisional identity, contrasting "us" to "them". They differentiated their divisions from other divisions on several occasions and believed that their division was more special than the others. When knowledge strategy across culture is formulated, creation of cultural synergy emerged across divisions is required. One may wonder why different cultural sub-groupings emerged in regard to the different kinds of cultural knowledge. Hypothetically, one single cultural grouping could have emerged across all four kinds of cultural knowledge, or the functional domain groupings found in regard to dictionary knowledge could have existed consistently across all four kinds of knowledge. No matter which innovations/changes were reported as major ones, the underlying processes by which these different innovations/changes were achieved were basically the same across organizational members, across different cultural groupings, and across different divisions. The cultural grouping at this level included all three research sites and therefore can be hypothesized to be companywide.

Method of knowledge transfer: The study by (Barkema and Vermeulen 1997) about international joint ventures (IJV) concerning reconciliation of difference in the cultural background is relevant to the formulation of KM strategy. IJVs entail unique risks, owing to the potential problems of cooperating with a partner from a different national and organizational culture. The cultural difference may create ambiguities in the relationship, which may lead to conflict and even dissolution of the venture. The authors based upon the eminent dimensions in (Hofstede 1994): power distance, uncertainty avoidance, individualism, and masculinity and long-term orientation which play a noticeable role in the management of the IJV and concluded that differences in values embedded in national cultures continue to lead to untimely dissolutions of IJVs and to influence the strategic choice. Therefore, this learning helps to formulate long-term KM strategy.

According to Barkema and Vermeulen (1997), organizational culture is often defined as a system of shared values that serves two critical functions: to solve problems of external adaptation and to solve problems of internal integration. Power distance and individualism directly bear on issues of internal integration and influence relationships with personnel, such as the organization choice of control forms, reward systems (Hofstede 1994). Internal integration bears on the organization's relationship with its employees which, in turn, is influenced by attitudes towards power distance, individualism and masculinity (Schneider 1989). Differences in uncertainty avoidance lead to differences in how partners perceive and respond to events in the environment of the IJV, which will likely breed disagreement and dispute between the partners, and have a detrimental impact on the IJV's chances of survival. Organizations will take not only expectations of future returns into account but also risks and knowledge transfers.

According to Saad, Cicmil *et al.* (2002), culture factor affects the technology policy. Virtually, the choice of the form of transfer is influenced by the recipient's knowledge and technical capabilities as well as the economic, social, cultural, institutional and political environment. Transfer is a highly complex and dynamic process and it has to encompass a crucial consolidation stage, which often includes adaptation, modification, and sometimes reinvention. A high accrued base level of information and knowledge would, for instance, enable the recipient or user to be more involved in playing a significant and active role in successfully acquiring, implementing and adapting technology and a more unpacked or fragmented type of contract could be adopted. The failure of those technology transfer projects in Algeria studied demonstrates a significant number of social, cultural, organizational and economic features can make it difficult or impossible to replicate from one country to other countries. Technology transfer projects are complex and risky in that they convey a great deal of uncertainty made up of technical, organizational, market, social, political and cultural factors. The author concluded that technology transfers have essentially failed as a result of restricted availability of indigenous knowledge and information; poor preparation procedures before negotiations; lack of proactive search for projects and partners; selection of projects and partners not based on national realities; significant dependency on learning-by doing and codified knowledge and ignoring the dynamic dimension of the process of technology transfer and the consolidation stage. This has led to a significant incompatibility between the imported and the recipient

environment. It is obvious that cultural factors affect those technology transfer projects, and are equally applied to formulate strategy for KM in organizational culture with different national cultural environment (Szulanski 1996).

4. OBSERVATION AND INTERVENTION

The adoption of ERP system as the KM tool is a good idea. Although Company-HK has made due considerations for the dimensions of various national cultures, critical organizational-cultural factors affecting KM process and system, creation of a knowledge sharing environment and the importance of organizational support before its implementation, certain perceived value has not yet been achieved and grievance from staff was brought forth. Indeed, the problems were come from implementation. Zhang, Tian *et al.* (2005) concluded two factors confronted the implementation of ERP system in knowledge sharing. In one aspect, only few employees understood the function and effectiveness of an ERP system. In another aspect, the top managers did not realize the objectives of an ERP system in each step of the whole circle, which eventually affected the efficiency of the system. These shortcomings were applicable to Company-HK. Therefore, continuous training, learning and practising by the staff are provided since its implementation.

However, there was further aspect related to cultural issues that must be overcome.

The ERP system was designed for knowledge sharing but the initial focus was on internal sharing amongst staff, but external knowledge from subcontractors and business partners were barred. Subcontractors could not access the ERP system and share their expertise. For example, one of the major civil projects (worth HK$2.2 billion) used the ERP system as the routine during the project execution (2003-2007). However, poor communication and knowledge sharing did exist and the project recorded an approximate 50% profit reduction and a seven months delay in comparing with original anticipation (delayed from October 2006 to May 2007). The project team complained that it was extremely difficult for them to communicate with subcontractors, though the ERP system was in place.

This project included the construction of cable stayed steel bridge section weighed approximate 9,500 tonne. The project setup was inherently cultural complicated. Project designer and engineer were from Finland, UK and Hong Kong respectively. Construction project manager was English; the major steel supplier was Japanese; steel deck fabricator was from PRC, and installer was French basis, while plants were provided by Hongkongese. These experienced professions were from different countries and of distinct cultures; they perceived differently the statutory requirements, specifications, programme, contract terms and safety awareness and practices. However, there was no common platform for them to share their valuable experiences.

Zhang, Tian *et al.* (2005) mentioned that when organization uses an ERP system for KM, it should be integrated with the overall company's strategic plan. Therefore, ERP+KM will be much effective if it is linked with other business strategy. In order to make the ERP system become a useful KM tool, Company-HK has endeavored intervention improvement actions to make it from good to great. For instance, the organization introduced the "preferred subcontractor scheme" since 2007. Subcontractors are most updated with the new skills and technologies in the marketplace, though the knowledge is basically resided mainly in a tacit form in the heads of the subcontractors and suppliers. Preferred sub-contractors are screened, selected and invited to provide professional advice of various trades in tendering as well as to improve the project quality by better communication during project execution. These subcontractors are advised to access an extranet platform as part of the KM process.

On the other hand, Company-HK also promoted the lesson learning portal since 2006. The successful stories and failure of previous projects committed were shared in the common platform and a lot of useful information and knowledge are provided. This knowledge is explicit in nature and codified (explicit) knowledge can be effectively transferred with the support of the ERP system.

Whilst ultimate performances of the ERP+KM system are beyond the scope of this paper, it was noted that Company-HK won a mega project (worth HK$5 billion) in 2008. Such KM process did contribute positively.

More and more construction organizations run cross-cultural project teams; and they will need to have the cross-leadership skills to assure successful projects. Although there are no shortage of leadership theory, cultural researches; and cross-cultural trainings, there is not enough cross-cultural leadership training provided to improve such leadership skills. It makes the KM process and PM practice hard to drive forward quickly. If the cross-leadership intelligence model by (Grisham 2006) could be used to improve leadership skills in the construction and engineering industry, it certainly can help to bridge some of the cultural gaps and improve the leadership training. Then, the KM process and PM practice can be improved quicker. Company-HK is worth to consider, as the next step, focusing on comprehensive cross-cultural leadership training.

5. CONCLUSIONS

The lesson learnt by this case study provides a model for other organizations and projects seeking the path to KM success.

It is quite interesting that Chelsea is still struggling to win a champion title in the 2008-2009 season. If this team wants to be a winner in the soccer pitch; the major ingredient is to invite the talents from anywhere around the world to build a strong team. The recipe for success is mainly hinged on how to manage football knowledge from different cultures and catalyze the chemical effects to create the synergy for a powerful team. Every player can then manifest their potential and excel over other teams.

In managing the construction organization with international business, the first step is to tactically recruit the best staff and practically outsource parts of its work. These human resources may be come from different countries. Management skill to blend these elite from different national cultures and build up the organizational culture is viewed as a dominant factor to success and win in the business battlefield. It is not easy to overcome cultural barriers to communicating and sharing invaluable internal and external knowledge together. Organization has more to do with formulate, design and implement the KM process than with changing their national cultures. With the understanding of organizational-cultures, creation of suitable knowledge sharing environment, provision of adequate organizational support and formulation of clear KM process are discussed to be the three important elements for the formula of knowledge advantage. It involves balancing the visible and invisible dimensions of culture; visibly demonstrating the importance of sharing knowledge and building on the invisible core values. The use of ICT tools, for example an ERP system, can help KM and communication within different cultures. Fluent information flow and better communication amongst different departments within the organization and projects can then be maintained.

Finally, organization may face different hiccups after the KM process is implemented. Therefore, organization should ceaselessly review, monitor and improve its own process: integrate with other business strategies and intervene positively from time to time.

REFERENCES

1) Al-Mashari, M., Al-Mudimigh, A, *et al.* (2003). “Enterprise resource planning: A Taxonomy of Critical Factors.” European Journal of Operational Research. 146 (2): 352-364.
2) Argyle, M., A. Furnham, *et al.* (1981). Social Situations. Cambridge, Cambridge University Press.
3) Barkema, H. G. and F. Vermeulen (1997). "What Differences in the Cultural Backgrounds of Partners are Detrimental for International Joint Ventures?" Journal of International Business Studies. 28(4): 845-864.
4) Berrell, M., P. Wright, *et al.* (1999). "The Influence of Culture on Managerial Behaviour." Journal of Management Development 18(7/8): 578-589.
5) Bodley, J. H. (2000). Cultural Anthropology: Tribes, States, and the Global System. California, Mayfield.
6) Chan, W. L. E., A. Mills, *et al.* (2009). "Improving an ERP System through the Use of a Knowledge Management Evaluation Framework." Journal of Knowledge Management 13(2).
7) CIRC (2001). Construction for Excellence. Hong Kong Construction Industry Review Committee.
8) Dixon, N. M. (2000). Common Knowledge: How Companies Thrive by Sharing What They Know? Boston, Harvard Business School Press.
9) Grisham, T. (2006). Cross Cultural Leadership. School of Property, Construction and Project Management. Melbourne, RMIT.
10) Gudykunst, W. B., Y. Matsumoto, *et al.* (1996). "The Influence of Cultural Individualism-Collectivism, Self Construals, and Individual Values on Communication Styles across Cultures." Human Communication Research, International Communication Association 22: 510-543.
11) Gudykunst, W. B., S. Ting-Toomey, *et al.* (1988). Culture and Interpersonal Communication. Newbury Park, SAGE.
12) Gulati, R. (1996). "Social Structure and Alliance Formation Patterns: a Longitudinal Analysis." Administrative Science Quarterly 40: p619-653.
13) Hall, E. T. and M. Hall (1990). Understanding Cultural Differences. Yarmouth, Me., Intercultural Press.
14) Hofstede, G. (1994). Culture and Organization: Software of the Mind. London, Harper Collins.
15) House, R., M. Javidan, *et al.* (2002). "Understanding Cultures and Implicit Leadership Theories Across the Globe: An Introduction to Project GLOBE." Journal of World Business 37(1): 3-10.
16) Huang, J., S. Newell, *et al.* (2004). "Enterprise Resource Planning and Knowledge Management Systems: Synergistic Solutions?"
17) Irwin, H. (1996). Communicating with Asia: Understanding People and Customs. St Leonards, N.S.W., Allen & Unwin.
18) Kamara, J. M., G. Augenbroe, *et al.* (2002). "Knowledge Management in the Architecture, Engineering and Construction Industry." Construction Innovation 2(1): 53-67.
19) Kambayashi, N. and H. Scarbrough (2001). "Cultural Influences on IT Use amongst Factory Managers: UK-Japanese Comparison." Journal of

Information Technology 16: 221-236.
20) Kerzner, H. (2003). "Strategic Planning for a Project Office." Project Management Journal 34(2): 13-25.
21) Kumar, K. and V. Hillegersberg (2000). "ERP Experiences and Evolution." Communication of ACM 43(4): 22-26.
22) Larry, A. S. and E. P. Richard (2004). Communication between Cultures. Belmont C.A., Thomson/Wadsworth.
23) Markus, M. L. (2001). "Toward a theory of knowledge reuse: Types of knowledge reuse situations and factors in reuse success." Journal of Management Information Systems 18(1): 57-94.
24) Matsumoto, D. R. (2004). Culture and Psychology. Belmont CA, Wadsworth/Thomson.
25) McDermott, R. and C. O'Dell (2001). "Overcoming Cultural Barriers to Sharing Knowledge." Journal of Knowledge Management 5(1): 76-85.
26) Mowery, D., Oxely, J. E. and B. S. Silverman (1996). "Strategic Alliances and Interfirm Knowledge Transfer." Strategic Management Journal 17 (Winter special Issue) 77-91.
27) Nah, F. F. H. (2002). Enterprise Resource Planning Solutions and Management. Hershey, IRM Press.
28) Neuman, W. L. and L. W. Kreuger (2003). Social Work Research Methods: Qualitative and Quantitative Approaches. Boston, Allyn and Bacon.
29) Owen, J. and F. Burstein (2005). Where Knowledge Management Resides within Project Management. Case Studies in Knowledge Management. J. Murray. Hershey, PA, Idea Group.
30) Peansupap, V. (2004). The Diffusion of Information Communication Technology Innovation within Large Australian Construction Organizations. School of Property, Construction and Project Management. Melbourne, RMIT University.
31) Peters, T. J. and R. H. Waterman (2004). In Search of Excellence: Lessons from America's Best-Run Companies. London, Profile Books.
32) Saad, M., S. Cicmil, *et al.* (2002). "Technology transfer projects in developing countries--furthering the Project Management perspectives." International Journal of Project Management 20(8): 617-625.
33) Sackmann, S. A. (1992). "Culture and Subcultures: An Analysis of Organizational Knowledge." Administrative Science Quarterly 37(1): 140-161.
34) Schneider, S. C. (1989). "Strategy Formulation: The Impact of National Culture." Organization Studies 10(2): 149-168.
35) Silverman, D. (1985). Qualitative Methodology and Sociology: Describing the Social World. Aldershot, Gower.
36) Szulanski, G. (1996). "Exploring Internal Stickiness: Impediments to the Transfer of Best Practice within the Firm." Strategic Management Journal 17 (Winter special Issue) 27-43.
37) Triandis, H. C. (1995). Individualism & Collectivism. USA, Westview.
38) Turner, J. R. (1999). The Handbook of Project-based Management. London, UK, McGraw-Hill.
39) Walker, D. H. T. (2004). The Knowledge Advantage (K-Adv): Unleashing Creativity and Innovation. Melbourne, RMIT University.
40) Werner, O. and G. M. Schoepfle (1987). Systematic Fieldwork: Foundations of Ethnography and Interviewing. Newbury Park CA, Sage.
41) Yin, R. (1994). Case Study Research. Thousand Oaks, California, Sage.
42) Yusuf, S. and O. Osman (2008). An Evaluation of the Use of Information Technology in the Malaysian Construction Industry. International Conference on Project Management 2008 - Achieving Excellence through Project Management, Kuala Lumpur, Malaysia, PMI - Malaysia Chapter.
43) Zack, M. H. (1999). "Developing a Knowledge Strategy." California Management Review 41(3): 125-145.
44) Zhang, L., Y. Tian, *et al.* (2005). Organizational Knowledge Sharing Based on the ERP Implementation of Yongxin Paper Co., Ltd. Case Studies in Knowledge Management. J. Murray. Hershey P.A., Idea Group.