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KNOWLEDGE MANAGEMENT PRACTICES IN THAI SMEs: INFLUENCE OF SME CHARACTERISTICS ON KNOWLEDGE MANAGEMENT PROCESSES

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Abstract

This paper investigates knowledge management (KM) practices by small and medium-sized enterprises (SMEs) in Thailand with view to understand how special characteristics of SMEs influence KM processes in such businesses. Most of the prior discussion has focused on KM and its prevalence in large organizations where the practice of KM permeates every KM sub-process. However, small and medium-sized enterprises (SMEs) may not perform these processes to the same degree due to their specific characteristics and limitations. A qualitative research method is used via two case studies to analyze the common current practices in KM in Enterprise Resource Planning (ERP) service providers. Two companies in Thailand were selected for this in-depth study. Detailed observations highlight the similarities between the SMEs' KM practices and their divergence from those generally observed in large organizations. Analysis demonstrates that certain SME characteristics seem to affect the KM sub-processes in interesting ways. Findings are serving as a pilot for conducting a qualitative study of a much large number of SMEs and also to construct a research model for a quantitative study of SMEs' KM practices.

Keywords: Knowledge management; Knowledge management process; SMEs; ERP implementation service provider

1. Introduction

Demand for knowledge management (KM) in small and medium-sized enterprises (SMEs) differs from that of a large organization because SMEs are not “a little big business” (Lim and Klobas, 2000; Wong and Aspinwal, 2004). Their specific characteristics lead to a unique disposition for KM; the principles that apply to large organizations cannot easily be scaled down and translated for applying to SMEs. Secondly, SMEs constitute a major portion of the industrial sector, especially in developing countries. (In Thailand, SMEs contributed 37.8% to the national GDP in 2004 - www.sme.go.th accessed February 2007). SMEs provide opportunities for individuals who are less suitable or willing to be employed in large organizations, thus contributing to the employment growth. They are a source of innovation in products and services; they supplement a variety of product and services by operating in niche markets (OECD, 2002; Thompson and Leyden, 1983; Acs 1996; Storey, 1994). Thus SMEs are not only an important, but an indispensable portion of a country's growth. Thirdly, some of the widely cited potential benefits of KM that apply aptly to SMEs are improvements in efficiency, decision-making, competency, learning, innovation, and responsiveness, among others (uit Beijerse, 1999; Skyrme and Amidon, 1997; Jarrar, 2002; Frey, 2001; Civi, 2002). As the global competition further intensifies, SMEs will be increasingly forced to compete in that market; hence their adoption of KM practices will be inevitable. Moreover, as more and more large corporations implement KM strategies, they will demand a higher level of knowledge integration from SMEs who are their value chain partners. Thus, it has become increasingly important to systematically study KM as it applies to SMEs.

In this study, we attempt to answer the question: How do specific characteristics of SMEs affect their knowledge management processes? The context of the study is the SMEs population comprising the Enterprise Resource Planning (ERP) implementation service providers in Thailand. This was chosen as a basis for investigation of KM practices in SMEs because this is a thriving group of entrepreneurs performing knowledge-intensive work (Dingsoyr and Royrvik, 2003). ERP implementation projects require effective integration of various types of knowledge such as ERP applications, business processes, government policies, experiences from previous projects, etc. KM helps to develop and improve individuals' skills and capabilities which is one of the critical success factors of the ERP implementation projects (Wang *et al.*, 2005). Moreover, some characteristics of ERP projects demand specific treatment: ERP projects are implemented in a scattered environment - each project team works at the customer's premises; an ERP implementation is a temporary time bound task; all new knowledge gets embedded within the project team members after completion of the project leading to knowledge fragmentation. Knowledge management facilitates capturing, storing and sharing of knowledge under this environment (Weiser and Morrison, 1998; Plessis, 2005).

Being a developing country, Thailand is experiencing a healthy growth in enterprise system implementations. Hence, there is a large number of SMEs in this population. Although, our results may not be generalizable to all SMEs, they may apply to other types of service providers to a large extent. Section 2 presents the research design and the case study framework. Section 3 presents two cases in detail; each replicates the research design laid out in the study framework. Section 4 analyzes data with respect to the framework and proposes research propositions derived from the analysis. Section 5 concludes the paper.

2. Study Framework

We follow a positivist case study methodology (Dubé and Paré, 2003) which prescribes a priori specification of constructs. This is done by way of building a two-dimensional study framework consisting of KM processes and SME characteristics. Figure 1 shows the framework for studying knowledge management practices in SMEs. It consists of two main parts: (i) the knowledge management process and (ii) SME characteristics. This framework is used to analyze the influence of specific SME characteristics on their KM processes.

Knowledge Management Process

Researchers have divided the knowledge management process into various sub-processes that can be grouped into four main sub-processes: (i) knowledge creation and acquisition, (ii) knowledge organization and retention, (iii) knowledge dissemination, and (iv) knowledge utilization. Different researchers have used different terminology or emphasized different aspects of these processes. Table 1 summarizes the nomenclature used. We briefly describe the four sub-processes as this understanding has implications for our analysis.

Knowledge Creation and Acquisition

This sub-process includes knowledge identification, capture, acquisition, and creation (Jackson, 1999; Currie, 2003). It starts with determining what knowledge is necessary by understanding a company's tasks and the knowledge required for the tasks. The company then sets up a knowledge management strategy that defines the method for obtaining knowledge by internal knowledge capture, creation, and external knowledge acquisition (Kucza, 2005; Probst *et al.*, 2000).

Knowledge Organization and Retention

Required knowledge in tacit form may be codified in an understandable format to the extent possible (Millar, 1997). After checking for consistency, explicit knowledge needs to be categorized, indexed, and stored in organizational repositories in a standard format for further use. The company should analyze usage behavior and design a retrieval process to ensure easy access.

Knowledge Dissemination

This sub-process involves knowledge sharing among employees within the company. Employees share both tacit and

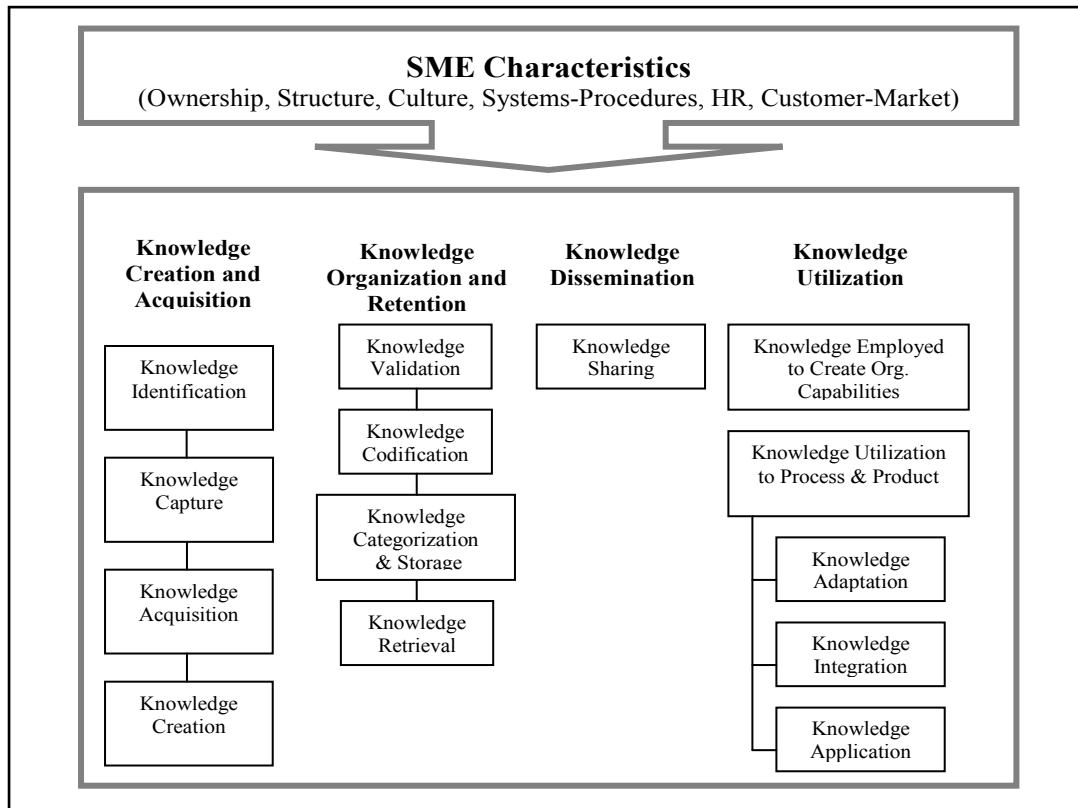


Figure 1. The Study framework

Table 1. Sub-processes of knowledge management

Knowledge Management Sub-Processes	Knowledge Management Processes From Different Researchers							
	Alavi and Leidner (2001)	Currie (2003)	Wong and Aspinwall (2004)	Nonaka and Takechi (1995)	Ruggles (1997)	Jackson (1999)	Angus et al. (1998)	Wensley (2000)
Knowledge Creation and Acquisition	Gathering					X	X	
	Generation				X			X
	Creation	X	X	X	X			
	Acquisition		X					
	Capture		X					
Knowledge Organization and Retention	Organizing			X			X	
	Refining						X	X
	Codification					X		X
	Storage/ Retrieval	X					X	
	Incorporate				X			
Knowledge Dissemination	Transfer	X				X		
	Transmission							X
	Sharing		X	X				
	Disseminate				X		X	
	Communication						X	
Knowledge Utilization	Application	X						
	Use		X	X				

explicit knowledge; however, different formats need different tools and techniques for sharing. A combination of incentives and a cooperative culture is the main supporting factor of knowledge dissemination (Morris and Empson, 1998). IT-based communication helps the process of dissemination to a great extent.

Knowledge Utilization

Knowledge utilization is defined by some researchers as the application and use of knowledge in an enterprise's value-adding process (Alavi and Leidner, 2001; Currie, 2003; Wong and Aspinwall, 2004). This sub-process includes the deployment of knowledge to create or develop an organizational capability. It also includes adapting, integrating, and applying knowledge to the organization's processes and products (Wong and Aspinwall, 2004; Lee *et al.*, 2005).

Normally, all sub-processes need to be carried out to ensure efficient knowledge management in an organization. Large organizations typically have more knowledge assets (both in extent and variety) and their knowledge sources and needs are also scattered in more dispersed locations. Hence, their need to implement KM systems to facilitate the four KM sub-processes is different from that of SMEs. This does not mean that SMEs, because of their small size, do not need these processes. Their workers do need for appropriate and up-to-date knowledge, but their processes may be governed by their specific limitations.

SME Characteristics

It is necessary to understand SME characteristics before exploring knowledge management activities in SME practices. A proper understanding of SME characteristics leads to a recognition of their strengths and limitations in managing knowledge. Starting with the framework of Wong and Aspinwall (2004), we categorized SME characteristics into five dimensions: (i) ownership and management structure, (ii) culture and behavior, (iii) systems, processes and procedures, (iv) human resources, and (v) customers and markets.

Ownership and Management Structure

Most SMEs are established and owned by entrepreneurs. The owners are also the company's strategic initiator. Decision-making in the company is limited to a few key personnel. Top management is close to the operational level because SMEs are less hierarchical. This structure leads to team cohesiveness, higher coordination and cooperation, etc., resulting in successful implementations of ERP projects (Wang *et al.*, 2005). Owners have a significant understanding of all aspects of their business and focus mainly on core processes (Lim and Klobas, 2000). Decision-making is centralized; most owners/partners have skills and competencies in their products and services, but they lack the skills for effective business management.

SMEs have a flatter and less complex organizational hierarchy. This leads to greater flexibility in work with limited or less clear division of responsibilities. There is lower degree of job specialization with more generalists (employees wear many hats). Communication lines are shorter, which allows for easier and more direct information flow.

Customers and Markets

SMEs normally depend on a small customer base. They mostly focus on local or regional markets with a few international markets. They usually have limited product/service lines and sometimes cater to niche markets. Employees frequently contact and have close relationships with their customers. This helps to quickly respond to customers' requests. Customer satisfaction is one of the main criteria to measure ERP implementation project performance because SMEs use word of mouth as their primary mechanism for advertising.

Systems, Processes and Procedures

SMEs have simple planning and control systems and informal rules and procedures. There is less standardization of work processes. The operations are less complex. Processes are more fluid and adaptable to various situations. SMEs also have a narrow scope and mostly focus on operational processes rather than strategic processes.

Human Resources

Labor is an important resource, but high turnover rates can severely affect operations since SMEs have a limited number of expert personnel (Huin, 2004). An ERP implementation is a complex task; the project team needs to possess a diverse set of expertise and know-how. Project leaders' and team members' concerted efforts and commitments are necessary for the success of the project (Wang *et al.*, 2005). Since SMEs have less clear employee responsibilities, a lower degree of job specialization occurs, leading to greater employee versatility (Wong and Aspinwall, 2004). Small scale training courses are arranged according to specific needs in an ad hoc manner. Employee performance evaluation is not standardized.

Culture and Behavior

SMEs usually have an informal, organic, and unified culture. Employees have a corporate mindset to recognize the company as a whole not as any single department or function. The operation and behavior of employees are influenced by the owner-managers' philosophy and beliefs. Measurement of company performance depends on results (results-oriented).

3. Case Study

In all four SMEs, two local Thai companies and two subsidiaries of multinational companies, were selected in this study to capture different characteristics of SME ERP service providers. Of these, the two completed studies are presented in this paper. Both are ERP business partners, i.e., companies that form an alliance with an ERP software owner to sell and implement the ERP application. These two companies vary in terms of organizational characteristics. The subsidiary of a multinational company enjoys the support from the parent company and its customer base, while the local one does not have that support structure. Due to confidentiality concerns the company and ERP software owner names are not disclosed. We refer to the two companies as Companies A and B. These companies were selected because of the prior relationship with the researcher. This relationship also helped to make observations of the working environment in the companies' offices and to get in-depth information.

The protocol for the case studies was as follows: Data was collected via semi-structured interviews conducted at the company's offices in order to observe the work processes and the environment. The interview questions focused on SME characteristics as well as KM processes. The question-answering cannot fully capture the case data; hence, personal interaction and observation was used to study the behaviors and practices of individuals in the organization. The working environment, including the informal activities of employees, was observed by the interviewer in the company premises. We formally interviewed one key person at the top management level of each company and also met a number of key personnel. These persons are accountable for all ERP application projects and lead all employees on their teams. They understand their own company from all perspectives and are therefore most suitable for gathering the data we needed. Interviews lasted for 2-3 hours each and the balance of the day was used for informal meetings and observations of the workplace, systems, documents, etc.

Questions were designed to elicit the information in three areas of interest: (i) general information about the interviewees and the companies, (ii) the perception of knowledge and knowledge management, and (iii) the current organizational policies, procedures, and practices in managing their organizational knowledge. The interview was tape recorded and notes were taken regarding the observations made. Each interview was transcribed word to word. Follow-up phone calls made to get more information if needed and to clarify understanding on some issues.

Case Study of Company A

The interviewee of Company A is a director/product manager. She has headed multiple established teams in her company and has a total of 14 years of ERP consulting and project experience. Prior to joining the company, she worked for one of the Big Five audit firms.

Ownership and Management Structure

Company A was formed in 2003 by ex-employees of big five auditing firms operating in Thailand. There are 45 employees in Company A. Most of them have ERP implementation skills and many years' of experience. There are no

more than 3 levels in the hierarchy: owner/partners, managers, and staff, with some employees having overlapping responsibilities.

Customers and Markets

Company A mainly focuses on the domestic market through two service lines: payroll outsourcing and ERP implementation. About 20 employees work on ERP implementation services where the company offers two ERP application systems. The Company handles 7 to 8 implementation projects per year. Project teams normally consist of 3-4 persons with one project manager and application/technical consultants.

Systems, Processes and Procedures

The company's work procedure and methodology were developed from a combination of the ERP application owner's procedures and the experience and familiarity of the established team. Allocation of human resources to the project depends on the availability of employees and specific knowledge requirements. In case of shortage of existing employees to shoulder the job, the company temporarily hires freelancers. There are weekly company and department meetings. Meetings are used to track the current company and department status through such topics as project progress, findings and solutions. There is also a brainstorming session about the ERP implementation process which includes project problems or problem-solving methods.

To store knowledge, the organization maintains a central database located on a company server. This database contains a directory for storing different types of project documentation and other necessary knowledge such as policies, regulations, and laws. The company has templates for different kinds of project documents. There is one person dedicated to technical support of this database. Each consultant is responsible for updating the content in the database. Apart from the internal database, the ERP application owner provides a database which includes essential knowledge for its partners. This external database provides useful knowledge for selling and implementing the ERP application.

Internet and e-mail are used as a communication tool to distribute knowledge among employees. Updated information is sent as attachment to e-mails and the original document is kept in the central database. The company also uses a bulletin board located near the central pathway for various announcements.

To evaluate project team performance, Company A has set up the following criteria: (i) Project schedule and estimated/actual time, including timesheet to track employees' time, (ii) Customer satisfaction through surveys during and after completion of the project, and (iii) Customer payments. Organizational performance is measured mainly in terms of the bottom line. In addition, the customer's perceptions on several organizational service aspects are gathered. The company also performs a yearly survey involving both current and past customers. This survey is conducted by an external party and directly reported to the managing director.

Human Resources

The company does not have a formal training or career development program for employees. However, internal training incorporates additional, necessary knowledge. Training is conducted by an internal knowledge worker who has expertise in a specific area. There are two main topics in internal training: ERP application knowledge related to the implementation project and general knowledge commonly used in work. Furthermore, coaching and on the job training are used to develop employees' skills. Use of external training courses or seminars is uncommon. The company sends an employee for training only if there is a specific need.

For individual performance, there is a top-down annual evaluation. Each employee is evaluated by his or her immediate supervisors. The measurement criteria are set up by evaluating managers; there is no standard. These criteria measure various aspects such as attitude, time taken to learn a process, proper execution of tasks, etc.

Culture and Behavior

There are formal yearly activities such as a new year's party, anniversary party, and outings. Furthermore, each project team has informal activities depending on the team members and occasions such as birthday parties or project completion celebrations. Most employees are older, so the urge for parties is not strong.

Workspace consists of groups of tables with partitions. Managers have their own workroom. The working environment has an informal consultation culture; anyone can go for a discussion with any other person at any time. The company also provides a pantry to facilitate coffee breaks and relaxation.

Case Study of Company B

The interviewee of Company B is a project manager in charge of multiple projects in respect of one (of the three) ERP application systems that the company represents. He has worked as an ERP consultant for 15 years. He too worked for one of the Big Five audit firms prior to joining the company.

Ownership and Management Structure

Company B is a subsidiary of a United Kingdom multinational company and was founded in 1996. All management and operational people are Thai. They can customize business activities to respond to the local culture and business environment. Some top management team members own shares in the company.

Company B has 50 employees. The managing director is responsible for the entire company. Project managers oversee each ERP application system area and control all projects in their area. Each sales/consulting team has a team lead. Thus there are three organizational levels (excluding the managing director).

Customers and Markets

Company B offers 3 ERP application systems. These applications differ in characteristics and capabilities to serve various customer needs. Each application is supported by specific employees. Employees in each team are required to be knowledgeable in their own ERP application area. Project teams normally consist of 2-6 persons. Technical support workers act as a pool and provide service for every project.

In addition, the company arranges conferences to expose customers to new information about the company's products, services, future trends, and future customer demand. Customer needs generated from these conferences cause the company to create new services. In turn, work procedures are adapted to deliver suitable solutions to that demand.

Systems, Processes and Procedures

The company's working methodology was created by combining the methodology of the parent company and the ERP application owner. The original methodologies are modified according to customer needs, the business environment in Thailand, and the specific application characteristics.

If the company lacks the knowledge to perform a certain task, it looks for an outstanding employee (expert) from the other teams in that required area. If internal expertise is not available, employees from other subsidiaries within the same region are temporarily loaned for this purpose. A business alliance is another way by which the company finds required knowledge. The company may also hire a freelance individual to work on projects. Hiring a new employee is the last option considered.

The company has two types of regular meetings: a weekly meeting to discuss project status and a monthly manager meeting for reporting team status and project issues. Employees are required to find new task-related knowledge with which to update their colleagues in the session.

There is an internal database which every employee can access from within and outside the company. It consists of two knowledge-based systems. The first system contains all the main project documents (i.e. project contracts, project

schedules, blueprints, or user manuals) and other useful information (i.e. taxes, policies, principles). There are procedures for project documentation and document templates. However, this system does not have any program or software for managing documents. The second system called the issue log system contains all errors, problems and solutions involving ERP application system operation as recorded by the supporting team. Knowledge in these two systems can be used mainly as a reference, guideline, or warning. Employees adapt this knowledge to new ERP implementation projects; it is rarely used “as is” because customer specifications are almost always different. These systems are located on the company’s server and used only in Thailand. Dedicated personnel take care of technical problems, checking all documents regularly. Employee are responsible for updating the documents they prepare.

For project performance evaluation, there are 3 measurements: (i) Comparison between estimated and actual time used, (ii) Timeliness of deliverable as planned, and (iii) Customer satisfaction There are 2 types of customer satisfaction surveys: questionnaire and phone.

Company B is a member of various tax and legal institutions which provide updated information on new taxes, regulations and policies via magazines or training courses. The ERP application owner also serves as the central information provider for its product. Moreover, the ERP business partners collaboratively create the web board community for sharing know-how.

Human Resources

To enhance employees’ skills and capabilities, Company B arranges internal training courses conducted by a knowledge worker within the company, from other subsidiaries, or an external expert in a specific area. Employees are sent to external training when the topic is very important, necessary and related to customer demand. Employees may attend an external training course unrelated to the topic, but they must pay for it themselves.

The company has a formal individual appraisal procedure to evaluate the current knowledge level of employees (i.e. skills, expertise, and capabilities) and to evaluate individual performance. A questionnaire with 3 groups of questions is used for evaluation. The first part evaluates the specific skills and capabilities on ERP application knowledge. The second part is general knowledge in other areas and individual talent. The third part is focused on a time frame to improve in some particular area. This evaluation process is performed quarterly and in a top-down fashion. The results of this evaluation serve to identify an outstanding expert in each area. In addition, each employee is also evaluated on timeliness with which they complete their tasks compared to the plans.

Culture and Behavior

Company B has an open environment. Employees can communicate both formally (via meetings, internet, e-mail) and informally (via work environment). E-mail is also used as an informal communication channels; e.g., when someone finds new knowledge, e-mail is used to inform everyone. Workspace at operational level consists of a gathering of desks with partitions for all ERP application teams. This working environment allows employees to easily walk and talk with each other.

The company has formal yearly activities such as a new year’s party and outings for team-building. They also have informal activities such as team parties, depending on the team preferences.

4. Analysis

Although the concept of knowledge management was introduced in Thailand quite some time ago and the interviewees heard about KM years ago from their Big Five multinational companies, it has recently become of interest to Thai companies because of the highly competitive nature of the global market. The perception of KM in Thai SMEs seems to be that it is more related to Information Technology; hence, the pervasiveness of KMS in SME’s is low.

Our analysis shows how the various KM processes are influenced by the SMEs’ characteristics as observed from the case studies. Only those SME characteristics that appear to significantly affect the KM processes are highlighted. Through this analysis, we theorize possible relationships between SME characteristics and KM processes as a set of propositions that can tested in future research.

Knowledge Creation and Acquisition

Ownership and Management Structure: There is no overt strategy for KM observed in the SMEs that were studied. There does not seem to be a statement of goals and objectives regarding tracking of knowledge gaps and identifying ways of enhancing organizational knowledge. Owner-managers play a significant role in the daily operation of their firms in which they themselves tend to be the beneficiary, not the organization as a whole. Organizational learning needs to occur at all levels of an enterprise in order to update its knowledge base. Learning at the employee level is limited to specific skills.

Proposition 1a: The Ownership-Management/Structure of SMEs limits their abilities to create and acquire new knowledge.

Systems, Processes, Procedures: Internally, knowledge may be created through research and development. But, the SMEs do not seem to have the dedicated research personnel due to lack of resources. A company's systems and procedures have an impact on internal capture of different types of knowledge. But, without formal incentives, such efforts are poorly subscribed to. Company B has an interesting procedure for acquiring new knowledge; employees are required to discover a new issue which they discuss in meetings. But, there does not seem to be a systematic way of permanently capturing the new insights.

Proposition 1b: The Systems-Processes-Procedures of SMEs are not conducive to creation and acquisition of new knowledge.

Customer and Market: SMEs have a close relationship with their customers. We found from the cases that the companies acquire or seek new knowledge when customers need it by learning and adapting their procedures. Also, the nimbler and informal nature of SMEs allows them to more easily align themselves with customer needs. This is a big advantage as it allows them to acquire valuable customer knowledge that gets embedded into their own procedures quickly.

Proposition 1c: The characteristics of Customer/Market of SMEs positively affect their abilities to create and acquire new knowledge.

Human Resources: Another alternative is to acquire new knowledge from external sources via employee training. Both companies rarely send employees to external training and did so only if the knowledge was imminently required for a job at hand. Moreover, if a knowledge gap is experienced, the companies tend to outsource the job to an external expert (freelancer). Such ad hoc procedures do not result in building a larger knowledge base. (Both companies prefer to rely on internal knowledge transfer, as discussed under Knowledge Dissemination later).

Proposition 1d: The HR characteristics of SMEs do not encourage creation and acquisition of new knowledge.

Knowledge Organization and Retention

Systems, Processes, Procedures: Neither company has a procedure to validate the existing organizational knowledge that they possess. Moreover, there is no organization-wide standard for codifying the available knowledge to make it understandable to everyone in the same way. However, the companies do have document templates, but these are only used for preparing the project document as a deliverable of the project. It excludes lesson learnt or tips that could be embedded by individuals. Thus, the organizational knowledge is partially documented. The procedures for storing and retrieval of organizational knowledge do not exist in both companies. Everyone can put anything into the organizational database. The quality of documents is left to the discretion of the contributor.

One of the outcomes of the individual appraisal process of company B is the identification of the current expertise within the company. Company A also uses a process of assigning known experts to appropriate projects. Perhaps this (formal or informal) procedure of identifying expertise is a strength of SMEs. Such tacit knowledge can be organized more easily by SMEs because of they have a smaller number of known experts.

Proposition 2a: The Systems-Processes-Procedures of SMEs are more conducive to organization and retention of existing tacit knowledge than explicit knowledge.

Human Resources: Due to limited resources in both personnel and budget, SMEs have a simple central database on a company server. There are no dedicated persons to keep the knowledge-base updated and organized for optimum usage. Given that the employee appraisals are heavily biased towards performance on their project related duties, there is no incentive for investing in knowledge organization/retention activities.

Proposition 2b: The HR characteristics of SMEs do not encourage organization and retention of existing knowledge.

Knowledge Dissemination

Ownership and Management Structure/Culture and Behavior: We found that the flat organizational structure of SMEs helps easy communication between the employees. Moreover, SMEs' culture has high impact on the knowledge sharing practices. We found that several tasks in ERP implementation require tacit knowledge. Person-to-person knowledge sharing is the best way to disseminate such knowledge that is hard to capture otherwise. The informal consultation culture of SMEs allows direct sharing of such knowledge even without incentives or reward system. The work environment also supports such knowledge dissemination. Company workspaces are designed to create an open environment allowing employees to freely share ideas with each other. Social activities such as gatherings and outings seem to promote team-building and trust that can form the basis for sharing valuable knowledge.

Proposition 3a: The Ownership-Management/Structure of SMEs enhances their abilities to disseminate available knowledge.

Proposition 3b: The Culture-Behavior characteristics of SMEs encourage dissemination of available knowledge.

Systems, Processes, Procedures: Many researchers agree that reward and recognition systems motivate knowledge sharing in organizations. However, SMEs do not have a formal system for rewarding knowledge sharing. Project performance evaluation procedures require employees to attend more to core activities than supporting activities that do not have a direct impact on project performance.

Proposition 3c: The Systems-Processes-Procedures of SMEs are not conducive to dissemination of available knowledge.

Human Resources: For disseminating internal knowledge, the companies seem to rely on internal training in a formalized manner and also on coaching. This is a relatively low cost activity for SMEs with substantial pay-back. These structured activities promote dissemination of expert knowledge to a broader set of employees.

Proposition 3d: The HR characteristics of SMEs facilitate dissemination of tacit knowledge.

Knowledge Utilization

Ownership and Management: In both cases, we found that the owner/managers would like the employees to utilize the available internal knowledge to the full extent because acquiring external knowledge can be prohibitively expensive. For example, the company B will look for a skilled employee from other teams if it lacks the required knowledge.

Proposition 4a: The Ownership-Management/Structure of SMEs encourages utilization of available knowledge.

Culture and Behavior: Because of the small size of an SME, employees can have a strong sense of belonging to the company. They know that their performance directly affects the bottom line and the company's success can directly affect them. This, together with the sense of trust, can prompt an employee to utilize all the tacit knowledge that they have and look for that of others who can bring their knowledge to the task.

Proposition 4b: The Culture-Behavior characteristics of SMEs facilitate utilization of available knowledge.

5. Conclusion

This study explored the common practices in managing knowledge in SMEs which are ERP implementation service providers. We collected data through in-depth semi-structured interviews from two local Thai SMEs to assess the way they manage their knowledge with respect to the four knowledge management sub-processes. Findings from this study confirm

that knowledge management practices do reside in these firms despite the firms being SMEs. However, the level of sophistication of KM activities in SMEs is different from large organizations. KM practices prevalent in large organizations cannot be directly translated to SMEs due to the SMEs' peculiarities.

The SME characteristics defined by Wong and Aspinwall (2004) were used to conduct an analysis of why SMEs' knowledge management processes are different than those of large organizations. Some of the predominant characteristics of SMEs seem to influence KM in SMEs more than others. Moreover, each characteristic influences KM sub-processes differently. Based on the limited insight formed from the two cases, dissemination and utilization of knowledge seems to benefit from the special characteristics of the SMEs. Specifically, the Ownership and Management structure and Cultural/Behavioral aspects of SMEs seem to favor internal knowledge transfer. Also, clients seem to drive the creation/acquisition of new knowledge. These observations are very interesting and need further exploration. Our analysis attempts to provide some explanations and insights regarding these observations. Owner/managers of SMEs concerned about their competitive landscape and looking into leveraging their knowledge resources should pay close attention to those SME characteristics which seem to hinder KM processes within their organizations.

A major limitation of this study is that it covers only two organizations, both belonging to the same industry, namely, ERP implementation service providers. We are presently processing the data gathered from all four organizations. ERP service providers have some distinctive features; they are consulting organizations that operate in terms of projects. Hence our results are not directly applicable to other SMEs such as manufacturing SMEs. Nevertheless, the results of this study provide insights into the organizations studied and those like them. It is important to follow up this study with a much larger sample to refine conclusions. Future efforts are aimed at constructing and testing a research model with a larger quantitative study.

6. References

- Acs, Z.J. (1996), "Small firms and economic growth", in *Admiral*, P.M. (Ed.), *Small Business in the Modern Economy*, Blackwell, Oxford, 1-62.
- Alavi, M. and Leidner, D.E. (2001) Review: knowledge management and knowledge management systems: conceptual foundations and research issues. *MIS Quarterly*, (25:1), 107-136.
- Angus, J., Patel, J. and Harty, J. (March 1998) Knowledge management: Great concept... but what is it? *Information Week*.
- Barr, S. (2006) Breaking up the big 5: For months, the SEC in the US has railed about auditor independence and quality. Is there really a problem? And is the separation of auditing and consulting a cure. June 2000, www.cfoasia.com/archives.200006-42.htm, Retrieved 1 October 2006
- Beijerse, R.P. (2000) Knowledge management in small and medium-sized companies: knowledge management for entrepreneurs. *Journal of Knowledge Management*, 4, 162-179.
- Bowonder, B. (2000) Technology strategy of Toshiba Corporation: a knowledge evolution perspective. *International Journal Technology Management*, 19, 864-895.
- Bresnen, M., Edelman, L., Newell, S., Scarbrough, H., Swan, J. (2003) Social practices and the management of knowledge in project environments. *International Journal of Project Management*, 21, 157-166.
- Civi, E. (2000), "Knowledge management as a competitive asset: a review", *Marketing Intelligence & Planning*, (18:4), pp. 166-74.
- Currie, W.L. (2003) A knowledge-based risk assessment framework for evaluating web-enabled application outsourcing projects. *International Journal of Project Management*, 21, 207-217.
- Dingsoyr, T. and Royrvik, E. (2003) An Empirical Study of an Informal Knowledge Repository in a Medium-Sized Software Consulting Company. *IEEE*, 84-92.
- Disterer, G. (2002) Management of project knowledge and experiences. *Journal of Knowledge Management*, (6:5), 512-520.
- Dube, L. and Pare, G. (2003) Rigor in Information Systems Positivist Case Research: Current Practices, Trends and Recommendations. *MIS Quarterly*, (27:4), 597-635.
- Frey, R.S. (2001), "Knowledge management, proposal development and small businesses", *The Journal of Management Development*, (20:1), 38-54.
- Gray, C.F., Larson, E.W. (2003) *Project Management: The Managerial Process*, McGraw-Hill Irwin (Second Edition).
- Huin, S.F. (2004) Managing deployment of ERP systems in SMEs using multi-agents. *International Journal of Project Management*, 22, 511-517.
- Jackson, C. (1999) *Process to product-Creating tools for knowledge management*, Conference in Lisbon, Portugal.
- Jarrar, Y.F. (2002), "Knowledge management: learning for organisational experience", *Managerial Auditing Journal*, (17:6), 322-8.

- Kucza, T. (2005) *Knowledge Management Process Model*, Retrieved 25 November 2005, <http://www.vtt.fi/inf/pdf/publications/2001/P455.pdf>
- Lee, K.C., Lee, S. and Kang, I.W. (2005) KMPI: measuring knowledge management performance. *Information & Management*, 42, 469-482.
- Lim, D. and Klobas, J. (2000) Knowledge management in small enterprises. *The Electronic Library*, 18, 420-432.
- Millar, J., Demaid, A. and Quintas, P. (1997) Trans-organizational innovation: a framework for research. *Technology Analysis & Strategic Management*, 9, 399-418.
- Morris, T. and Empson, L. (1998) Organisation and expertise: An exploration of knowledge bases and the management of accounting and consulting firms. *Accounting, Organizations and Society*, 23, 609-624.
- Nonaka, I. and Takeuchi, H. (1995) *The Knowledge-creating Company*, New York: Oxford University Press, Oxford.
- OECD (2002), OECD Small and Medium Enterprise Outlook, Organisation for Economic Co-operation and Development, Paris.
- Plessis, M.D. (2005) Drivers of knowledge management in the corporate environment. *International Journal of Information Management*, 25, 193-202.
- Probst, G., Raub, S. and Romhardt, K. (2000) *Managing Knowledge: Building Blocks for Success*, Chichester: John Wiley & Sons.
- Ruggles, R. (1997) *Knowledge management tools*, Oxford: Butterworth-Heinemann.
- Scherer, E. (2000) The knowledge network: knowledge generation during implementation of application software packages. *Logistics Information Management*, (13:4), 210-217.
- Skyrme, D. and Amidon, D. (1997), "The knowledge agenda", *Journal of Knowledge Management*, (1:1), 27-37.
- Storey, D.J. (1994), *Understanding the Small Business sector*, Routledge, London.
- Thompson, J.H. and Leyden, D.R. (1983) "The United States of America", in Storey, D.J. (Ed), *The Small Firm – An International Survey*, Croom Helm, London, 7-45.
- uit Beijerse, R.P. (2000), "Knowledge management in small and medium-sized companies: knowledge management for entrepreneurs", *Journal of Knowledge Management*, (4:2), 162-79.
- Wang, E., Chou, H.W., Jiang, J. (2005) The impacts of charismatic leadership style on team cohesiveness and overall performance during ERP implementation. *International Journal of Project Management*, 23, 173-180.
- Weiser, M., Morrison, J. (1998) Project memory: Information management for project teams. *Journal of Management Information System*, (40:4), 149-166.
- Wensley, A. (2000) Tools for knowledge management. Coventry: University of Warwick, *BPRC Conference on Knowledge Management: Concepts and Controversies*, February 10-11.
- Wong, K.Y. and Aspinwall, E. (2004) Characterizing knowledge management in the small business environment. *Journal of Knowledge Management*, (8:3), 44-61.
- Wong, K.Y. and Aspinwall, E. (2005) Knowledge Management: Case Studies in SMEs and Evaluation of an Integrated Approach. *Journal of Information and Knowledge Management*, (4:2), 95-114.
- www.sme.go.th/DesktopPage.aspx?pid=35&tabid=284043, (2007) Retrieved on February 2007.