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Yuh Law

National University of Singapore

Lee-Partridge Eng

National University of Singapore

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Issues in Knowledge Management - A Singapore Perspective

David Yuh Foong Law, National University of Singapore, fbalawyf@nus.edu.sg
Joo Eng Lee-Partridge, National University of Singapore, fbaleeje@nus.edu.sg

Introduction

The field of Knowledge Management (KM) is an important evolving area of interdisciplinary research and practice with global shifts toward a knowledge-based economy. Within organisations, knowledge resources are fast becoming critical intellectual assets with strategic roles in organisational survival and competitiveness. KM is the formalisation of and access to experience, knowledge, and expertise that create new capabilities, enable superior performance, encourage innovation, and enhance customer value (Beckman 1997). The key objectives of KM can be summarised as: firstly to make the enterprise act as intelligently as possible to secure its viability and overall success, and secondly, to otherwise realise the best value of its knowledge assets (Wiig 1997a). In essence, KM involves the creation of the environment and opportunities to enhance the potential for co-ordination and synergism between networks and pools of knowledge. KM can be examined at different levels and explored along a wide range of perspectives. This reveals the diversity and complexity of KM in research and practice (Wiig et al. 1997; Wiig 1997b; Garvin 1998; Nonaka 1998; Shariq 1998).

In the context of Singapore, a small nation whose main resource is human skills and knowledge, it needs to transform into a knowledge-based economy so as to survive and compete economically. The ability and need to effectively exploit the intellectual resources within and around a business domain have thus become a major challenge for knowledge-intensive organisations. KM technologies and practices will play a major role in supporting knowledge work and related processes. Despite the increasing KM awareness and interest in Singapore, there exists a wide range of views and perceptions on KM. It is still generally unclear how an organisation initiates and implements KM projects and exactly how KM can contribute to business growth and developments. The current lack of both a well-defined view of the subject and empirical insights have motivated this study of KM-related issues in Singapore. The main objective of this study is to carry out a preliminary qualitative survey of the level of awareness, the state of practice, and industrial perceptions on KM among various organisations in Singapore. Focus group study was used as an effective method for collecting rich and broad-based qualitative data, and also for grounding theories and concepts. Some of the initial results (participants perceptions, opinions and views) from this study can be broadly categorised into: awareness and concept of

knowledge and KM; facilitators and inhibitors of KM; issues related to KM mechanisms and implementation approaches; and the roles and responsibilities in KM. A brief analysis of the results and implications for future work will be discussed. Some of our findings also appear to be consistent with those of another recent KM survey.

Focus Group Study As A Qualitative Research Method

As KM is still an emerging field in its infancy in Singapore, an exploratory qualitative research strategy was adopted to solicit opinions and perceptions from various organisations in Singapore. Focus group method is a qualitative research technique in which a group of 8 to 10 participants of similar demographics, attitudes, or behavioural patterns are led through a (usually) 2-hour discussion of a particular topic by a moderator (Greenbaum 1998). This technique has been popularly used in marketing research for gathering consumers reactions towards certain products and services, but has yet to be adopted or accepted in mainstream IS research. In our study of KM, we have adapted the focus group technique as part of an overall grounded theory approach (Strauss and Corbin 1998) to obtain rich and qualitative insights from participants. Large and rich amounts of data in the participants' own words can be readily obtained, thereby enabling them to obtain deeper levels of meaning, make important connections and identify subtle nuances in expression of meaning. In our focus group study, a total of 3 separate sessions have been conducted; an average of 8 participants per group, each in their mid-40s with close to 20 years of industry experience. They were mainly CIOs and senior IS executives from 18 large Singapore-based organisations, across various industries including government bodies, academic institutions, consulting firms and multi-national corporations. Each session was audio and video taped for subsequent coding and analysis.

Perceptions of CIOs and Senior IS Executives

Some of the preliminary results from the focus group study are extracted, summarised and grouped under various categories below in table 1. These findings reflect some of the issues discussed, the perceptions, views and opinions of the participants, and the current state of KM planning and practice in their respective organisations. The issues discussed under each category could be related to any one or a combination of cultural, technological, managerial and other aspects of KM.

KM Issues	Perceptions, Opinions and Views from Focus Group Participants
General Perception of Knowledge and KM	
"Knowledge" vs "Information"	<i>Similarities:</i> knowledge as a summary of information; a subset of information; related or specific or tailored to a domain, or a task at hand, or to pursue a business objective. <i>Differences:</i> information very general, covers wide scope; information can be gathered, analysed, but may not be internalised, while knowledge is internalised (tacit), in-built within individuals. In this sense, knowledge is regarded as internalised and actionable information.
Examples and applications of knowledge and benefits of KM	Knowledge only becomes useful when applied. Knowledge facilitates decision-making by allowing the person to access best available knowledge in order to make optimal decisions. Organisational knowledge includes: processes, procedures, best practices (to increase productivity), and competitive advantage knowledge (to achieve better customer service, more profits, larger market share). KM is the know-how to share knowledge and utilise knowledge when it is needed. Experts' knowledge will be increasingly focussed and specialised. Meta-knowledge ("knowledge about knowledge") helps to track an organisation's intellectual resources and expertise for quick access and retrieval.
Doubts and scepticism	KM effort may not be useful or worthy; some knowledge may not be worth capturing due to: the nature of short project life cycles; and the quick obsolescence of knowledge and expertise (out-dated technologies, markets, products, etc.).
Perception of the Facilitators and Inhibitors of KM	
Organisational Culture	Mindset and cultural change was regarded as an important factor for the awareness and adoption of KM concepts, practices and technologies. The CEO will be a key figure in making or breaking such a culture.
Organisational structure, existing resources and infrastructure	An organisation with a relatively flat structure comprising more workgroups and teams are generally considered more favourable for KM compared to a more hierarchical, multi-layered organisational structure. A KM practitioner should have the authority to move around freely within an enterprise, gathering knowledge and accessing knowledge bases from various departments and sections. Existing organisational structure should be modified to reflect this. From a technology and resources perspective, the existing infrastructure and management practices of large organisations in Singapore are quite ready for the adoption and implementation of new KM initiatives.
"Push & Pull" factor for KM	The adoption of KM was also viewed as a "push and pull" factor whereby the CEO should "push" it (KM champion) while the technology providers will "pull" it (provide KM solutions).
Knowledge sharing at the organisational and individual levels	Asians tend to be more conserved and reticent. Organisational factors that affects knowledge sharing include identifying sharing motivators and developing sharing passions; the mechanisms and practices to promote sharing (e.g. conferences, seminars, discussion groups), and sharing using innovative techniques (e.g. story-telling); and the appropriate technologies to support sharing processes and activities (e.g. groupwares, common knowledge bases, etc). At the individual level, the factors affecting personal sharing of tacit knowledge could be: his ability to express his knowledge clearly and adequately, his concerns of losing his expert status and value in the organisation if he shares, the correctness and completeness of expert knowledge, and knowledge documentation in an understandable form.
Knowledge capturing and documentation	In capturing and documenting knowledge, usually the symptoms and the solutions to a problem are captured, but often the real cause of the problem is not recorded. The real cause of a problem should be highlighted. Also, with the problem of information overload, a person may sometimes be more biased towards the type of information and knowledge which they wish to extract, with the possibility of missing out on other important aspects.
Short-term external factors such as: the economic crisis in Asia; the Y2K problem.	The current economic crisis in Asia could be a major factor influencing the decision and rate of KM adoption and diffusion. Organisations could be more competitive through KM to enable new markets entry, offer new products and services. However on the other hand, there is a pressure to cut cost/budget through downsizing business operations, retrenching high-salaried (usually experienced and knowledgeable) employees, and aborting or freezing potential new KM projects. Towards the end of this century, most IT departments will focus their attention and resources on solving the Y2K millennium problem, hence shifting KM projects to a lower priority.
Views on KM Mechanisms and Implementation Approaches	
Methods and approaches for knowledge capture	In general, tacit knowledge in organisations (e.g. a cultural practice, a particular way of doing a project, etc.) are not easily captured as they are not documented or formalised. Explicit knowledge could be easily captured through practices such as ISO9000 procedures/documentation. Other methods of knowledge gathering include interviews and collecting frequently asked questions. Knowledge acquisition should always have clear objectives and reasons. Organisation could acquire knowledge within itself (e.g. operations and processes) and externally (e.g. competitors and customers knowledge). Gathered knowledge should be carefully sorted and categorised for effective retrieval and use. Suggested methods to motivate sharing include: staff suggestion schemes, reward scheme for sharing and good ideas, conferring recognition, incorporation into staff appraisal/promotion, encourage project teams formation, etc.
Technological issues and perceptions	Technological issues appear to be of lower concerns in KM, although the general consensus is that KM will require a hybrid of technologies to support the identification, acquisition, development, dissemination, use, and preservation of the enterprise's knowledge. These technologies are generally available in the market while others are actively in the research pipeline. Popular tools adopted include groupwares (e.g. Lotus Notes), internet/intranet/web servers, search engines, agents, information databases and data warehouses. Intelligent and knowledge-based technologies (e.g. artificial intelligence (AI), expert systems) are gaining more attention. These advanced technologies are expected to play an increasingly important role in KM. Future trends of technology should focus on preventing information overload, effective retrieval mechanisms, and intelligent means of personalising knowledge gathering, selection and delivery. With this wide spectrum of technologies to select from, the main challenge here is to match the appropriate tool or sets of tools to a particular KM activity.

<i>Perception of the Roles and Responsibilities in KM</i>	
The need for a group of KM practitioners	In order to carry out quality KM tasks, there is a need for a separate dedicated team of KM practitioners. Such a team could comprise a Chief Knowledge Officer (CKO), knowledge managers and practitioners with cross-functional business knowledge, diverse training background and specialised skills.
Desired attributes and the roles of a CKO	Reports directly to the CEO, and working very closely with the CIO. Alternatively the CEO could undertake this role. Due to the emphasis and wide coverage of business and domain knowledge in KM, it may not be appropriate for the CIO or IS practitioners to lead a KM department or drive KM projects. However IS practitioners should continue to play an important role in supporting KM efforts with the latest tools and technologies.
Requirements of a KM practitioner	The candidate should possess the relevant domain knowledge, be able to understand the organisational business well, have good working knowledge and overview of information technologies (IT), and good team-working and communications skills. In addition, the candidate should have some basic understanding of the psychological and educational aspects related to the thinking and learning processes in people. Prior knowledge of domain could facilitate the comprehension, organisation and indexing of the knowledge captured. However one concern here is that the KM practitioner may be too close to the business domain itself, with thinking patterns very similar to that of the domain expert. As a result this may hinder the KM practitioner from observing things from a fresh perspective, or leaving out bits of knowledge and information which may seem trivial to the expert during the knowledge acquisition process. Another view holds that KM practitioners may not necessarily possess domain knowledge, but instead should possess a set of specialised knowledge handling and engineering skills.

Table 1. Perception of KM issues among CIOs and senior IS executives in Singapore.

Analysis and Discussion

The KM issues discussed may be broadly divided into Natural Knowledge Management (NKM) and Artificial Knowledge Management (AKM) issues. NKM generally covers organisational factors and practices while AKM addresses technology-based issues. In general there is still no clear distinction between information and knowledge in terms of form and structure, but attempts have been made to differentiate them based on their levels of content summary, the manner in which it is internalised within a person, and the contexts of their applications. The participants appear to have a better grasp of the concept of KM than that of the more abstract concept of knowledge and information. Currently, most organisations have yet to formulate or adopt a formal KM agenda, despite the growing awareness and interest in KM. Having a team of KM practitioners and the right organisational culture are the two most important factors that drive KM. Existing organisational practices such as staff suggestion schemes, discussion sessions, human resource functions (rewards, appraisals, defining new KM roles and responsibilities) to facilitate and motivate knowledge sharing; management of business operations in line with ISO9000 requirements; increased interest and support from the CEO and top management; could be ideal foundations for creating a conducive KM culture and for the development of a good organisational NKM strategy. Technologies perceived to be suitable for KM include groupwares, internet tools and information databases. The focus group participants, all of which are IS professionals, appear confident of the technological capabilities to support KM, though there is very little discussion about the capabilities of intelligent and AI technologies. Some of our findings appear consistent with those from a recent KM survey of CIOs (Alavi and Leidner 1999), especially on issues related to culture, management and technology for KM; knowledge needs, and its effective management; and some of the

challenges ahead. Our study further reveals that the IS leaders are also struggling with a couple of open-ended issues which they have not quite come to terms with. These include: defining the structure and context of knowledge; using effective AKM methods for tacit to explicit knowledge conversion; and identifying strategic roles of intelligent and AI technologies in KM.

From our analysis and observations, we propose the following grounded hypotheses: (H1) Organisations may not have fully appreciated the capabilities and roles of AI technologies; and (H2) Knowledge engineering skills and AI technologies could potentially offer effective solutions to overcome current difficult KM issues in structuring and contextualising the knowledge content, and in facilitating the conversion of knowledge from tacit to explicit forms.

Conclusion and Future Implications

The results of this study reveal a healthy state of KM awareness and attitudes among CIOs and senior IS professionals in Singapore. A growing number of large organisations appear to have existing infrastructures and management practices which could serve as a conducive foundation for mounting a KM framework. Presently some of the preliminary efforts for KM in organisations are positive steps forward, but are merely tactical moves. These organisations generally still lack a focussed strategic KM vision and plan, the appreciation of more sophisticated and intelligent-based technologies for KM, the appropriate skill sets and tools for engineering the knowledge content itself. Our future work will explore hypotheses H1 and H2 and possibly identify a hybrid NKM and AKM approach in order to address current shortcomings and limitations in KM.

References available from the first author and at <http://www.fba.nus.edu.sg/cmit/people/amcis99KM.html>.