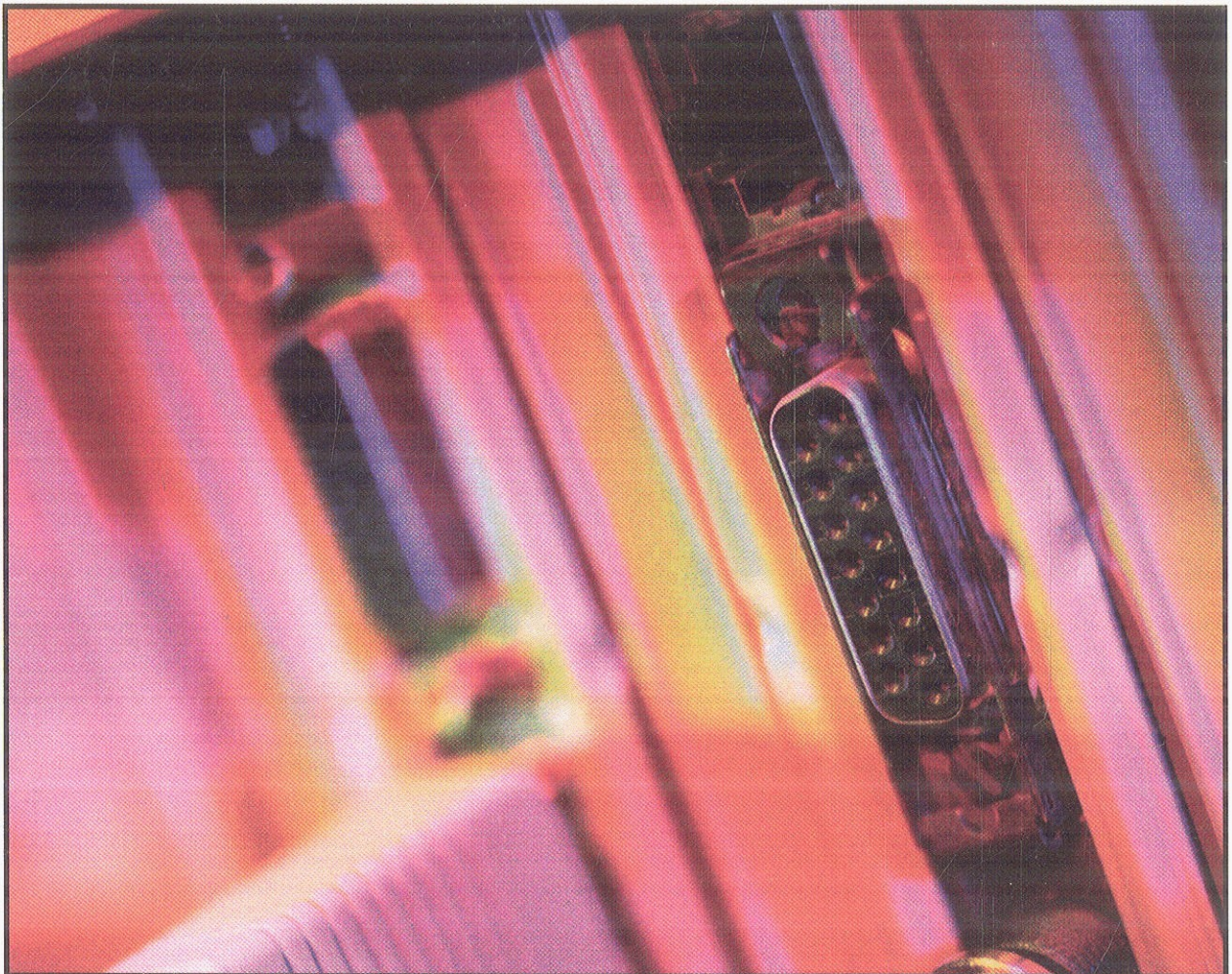# Knowledge Management, Organizational Memory, and Transfer Behavior

Global Approaches and Advancements

Murray E. Jennex

Detailed Table of Contents

Chapter I

>   *Murray E. Jennex, San Diego State University, USA*

This short chapter focuses on two key issues, the relevance of KM to information systems research and the risk of KM becoming a fad like business process reengineering. The role of the integrator is introduced and the idea that KM is the solution to the productivity paradox is discussed. The chapter concludes with a discussion on the future of KM and proposes that KM can be the bridge to the knowledge society.

Chapter II

>   *Peter Keen, Nanyang Technological University, Singapore*
>   *Margaret Tan, Nanyang Technological University, Singapore*

The aim of this chapter is to identify some of the gaps in the current body of knowledge about KM and in doing so to suggest extensions to its frameworks and to areas of investigation that build on its strengths. The authors propose a simple framework for what is termed Knowledge Fusion.

Chapter III

>   *Hazel Taylor, The Information School, University of Washington, Seattle, USA*

This chapter explores the concept of 'tacit knowledge' and how organizations can foster the sharing and exchange of tacit knowledge. Various views of tacit knowledge are discussed and a framework is developed distinguishing different conceptualizations of knowledge and how different types of knowledge are acquired, held in memory, and manifested. An understanding of these distinctions can aid in determining the best approach for transferring tacit knowledge and skills at the individual and organizational levels. Finally, I review various tacit knowledge transfer approaches based on the distinctions identified in the framework and discuss their suitability for different aspects of tacit knowledge transfer.

This chapter adds to our understanding of KM as an evolving body of concepts, relationships, strategies and practices. Using qualitative research methods, we examined activities of a community of practice for knowledge management professionals operating in a large metropolitan U.S. region. Accordingly, we produced an organizing framework that maps KM topics according to the tactical-strategic orientation of the KM issue and level of analysis (individual-group-enterprise). We constructed and populated the framework based on a content analysis of forty-four presentations made from 2001-2005, from survey data, from interviews conducted with key informants, and from data collected as participant-observers. The work provides insight into the decision-making processes of stakeholders with competing interests and adds to our understanding of collective sensemaking in a community of practice. From the data, we generated a framework that can be used by practitioners to allocate resources for KM activities, technologies, and projects.

Just as Porter's value chain model identifies classes of business activity that can be performed in ways that contribute to a firm's competitiveness, the knowledge chain model contends there are classes of KM activity that can be performed in ways that enhance firm competitiveness. These KM activities pervade the value chain, being inherent in the implementation of each value chain activity. Derived from a collaboratively engineered ontology of knowledge management, the knowledge chain model is supported by anecdotal evidence and a survey has found support for the propositions that its activity classes are linked to enhanced productivity, agility, innovation, and reputation. Here, we present a study of leaders of KM initiatives that examines each of the nine knowledge chain classes in terms of its competitive impact and the extent to which its positive impact on competitiveness is associated with the importance of technology in performing activities within that class. The study provides confirming evidence that each of the knowledge chain activity classes can be performed in ways that contribute to competitiveness. Moreover, we find that for five of the activity classes there is a significant positive correlation between impact on competitiveness and the importance of computer-based technology in implementing the class's activities.

Tacit knowledge attenuates particularly quickly in organizations that experience discontinuous membership: the coming and going of organizational roles or positions during a workflow process. Since knowledge flows enable workflows, and workflows drive performance, theory suggests that dynamic knowledge—particularly tacit knowledge—is critical for competitive advantage. This research seeks to extend established organization theory, through integration of emerging knowledge-flow theory, to inform the design of discontinuous organizations. Toward this end, we build a computational model based upon ethnographic study of an affordable housing project that experienced severe discontinuous membership. Analysis of this model reveals problematic theoretical gaps, and provides insight into how scholarly understanding of knowledge flows can extend organization theory to address discontinuous organizations. This research contributes new knowledge for designing knowledge-based organizations in discontinuous contexts.

Chapter VII

Frank Land, London School of Economics, UK
Urooj Amjad, London School of Economics, UK
Sevasti-Melissa Nolas, London School of Economics, UK

The purpose of this chapter is to make the case for integrating ethics and with it accountability into research about KM. Ethics refers to the motives and methods for KM processes, and their impact on individuals, on organizations, and on society. Ethical issues are also relevant to the researcher studying KM, where the subject being researched and the way the research is conducted can raise ethical issues. The interaction of actors, processes, and technology in all aspects of KM from research to design, and actual use can raise a wide range of ethical dilemmas.

Chapter VIII

Social Capital and Knowledge Sharing in Knowledge-Based Organizations:
Chay Yue Wah, SIM University, Singapore
Thomas Menkhoff, Singapore Management University, Singapore
Benjamin Loh, University of Cambridge, UK
Hans-Dieter Evers, University of Bonn, Germany

This chapter presents a study that aims to understand the social and organizational factors that influence knowledge sharing. A model of KM and knowledge sharing was developed inspired by the work of Nahapiet and Ghoshal. Data on KM processes and various social capital measures were collected from a sample of 262 members of a tertiary educational institution in Singapore. Rewards & incentives, open-mindedness, and cost-benefit concerns of knowledge hoarding turned out to be the strongest predictors of knowledge sharing rather than pro-social motives or organizational care. Individuals who are highly competent in their work abilities are less likely to share what they know when they perceive that there are few rewards or when sharing is not recognized by the organization. The findings provide evidence for the importance of social capital as a lubricant of knowledge sharing and 'engaging' performance management systems in knowledge-intensive organizations.

A knowledge management system (KMS) project transcends functional departments and business part-ners. The success of KMS implementation is highly contingent upon a well-orchestrated integration of multiple systemic contexts, such as communication channels, user involvement, power structure among stakeholders, corporate culture, project champion, interorganizational networks, etc. These organizational factors are embedded throughout the life cycle of a KMS project and within an organization. Understand-ing the influences of these organizational factors to the success of KMS projects can provide lessons for systems developers and management to increase the success rate of system implementation. The study is based around AMC, a major Taiwanese motor company faced with the challenge of deploying a knowledge management system. Over a period of 3 years (1999-2002) structured interviews were conducted to examine organizational factors contributing to the success of KMS efforts in AMC. The major emphasis of this chapter is to apply the concepts of structuration theory to assess the interaction of corporate management with users of a knowledge management system. The findings suggest that management and users must be engaged in a sustained and reciprocal communication method when implementing a KMS. The pattern of communication, power structure, sanction power, and degree of cooperation are dynamically changed during the interaction process. Therefore, it is important to ma-neuver these factors into a win-win situation for management and users to successfully implement a KMS. Practical implications resulting from this research provide feasible real solutions to improve the relationship between users and management during a KMS implementation.

This chapter explores KM and KMS success. The inspiration for this chapter is the KM Success and Measurement minitrack held at the Hawaii International Conference on System Sciences in January of 2007 and 2008. KM and KMS success are issues needing to be explored. The Knowledge Management Foundations workshop held at the Hawaii International Conference on System Sciences (HICSS-39) in January 2006 discussed this issue and reached agreement that it is important for the credibility of the KM discipline that we be able to define KM success. Additionally, from the perspective of KM academics and practitioners, identifying the factors, constructs, and variables that define KM success is crucial to understanding how these initiatives and systems should be designed and implemented. This chapter presents results of a survey looking at how KM practitioners, researchers, KM students, and others interested in KM view what constitutes KM success. The chapter presents some background on KM success and then a series of perspectives on KM/KMS success. These perspectives were derived

by looking at responses to questions asking academics and practitioners how they defined KM/KMS success. The chapter concludes by presenting the results of an exploratory survey on KM/KMS success beliefs and attitudes.

Chapter XI

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Kevin J. O'Sullivan, New York Institute of Technology, USA
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This chapter investigates the status of KM practices implemented across federal agencies of the U.S. government. It analyzes the extent to which this status is influenced by the size of the agency, whether or not the agency type is a Cabinet-level Department or Independent Agency, the longevity of KM Practices implemented in the agency, whether or not the agency has adopted a written KM policy or strategy, and whether the primary responsibility for KM Practices in the agency is directed by a CKO or KM unit versus other functional locations in the agency. The research also tests for possible KM practitioner bias, since the survey was directed to members of the Knowledge Management Working Group of the Federal CIO Council who are KM practitioners in federal agencies.

Chapter XII

Kevin Laframboise, Concordia University, Canada
Anne-Marie Croteau, Concordia University, Canada
Anne Beaudry, Concordia University, Canada
Mantas Manovas, Concordia University, Canada

This chapter reports on a study that investigates the knowledge transfer between an information systems/technology (IT) department and non-IT departments during information technology projects. More specifically, we look into the link between the KM capabilities of the IT department and the effectiveness and efficiency of the knowledge transfer to a client department. KM capabilities are defined by Gold et al. (2001) as the combination of knowledge infrastructure capabilities (structural, technical, and cultural) and knowledge processes capabilities (acquisition, conversion, application, and protection). Data collected through a web-based survey result in 127 usable questionnaires completed by managers in large Canadian organizations. Data analysis performed using PLS indicates that knowledge infrastructure capabilities are related to the knowledge transfer success, and more specifically to its effectiveness whereas knowledge processes capabilities are only related to the efficiency of such transfer. Implications of our results for research and practice are also discussed

The purpose of this chapter is to contribute to the improvement of the acceptance of information systems devoted to the codification and sharing of knowledge (a type of Knowledge Management Systems, KMS). A research model was developed through a multi-staged and multi-method research process and its test supports the hypotheses that the acceptance of KMS is determined, in addition to the classical constructs of the technology acceptance model (TAM), by a few organizational factors, and by the influence exerted on the user by individuals close to her/him.

While a great deal has been written about how information systems (IS) can be deployed to facilitate knowledge management for performance improvements, there is little empirical evidence suggesting such IS deployment can actually improve a firm's bottom-line performance. This study attempted to assess the impacts of IS support for two key KM activities, knowledge generation and knowledge transfer, on labor productivity and profitability with both survey and archival data. The potential moderating effects of firm-specific, complementary organizational resources on the performance impacts of the IS support were also examined and tested. The results showed that IS support for knowledge generation and IS support for knowledge transfer both had direct positive effects on labor productivity. Coupled with firm-specific, complementary organizational resources, both types of IS support exerted positive effects on profitability.

The goal of this chapter is to explore how national (Chinese) culture influences knowledge sharing in virtual communities of practice at a large U.S.-based multinational organization. The study involved qualitative interviews with the company's employees in China, and managers who are involved in managing knowledge-sharing initiatives. The study findings suggest that the influence of the national culture could be less pronounced in online knowledge sharing than what the literature has suggested. Although Chinese employees' tendency to draw sharp distinctions between in-groups and out-groups, as well as the modesty requirements were barriers to knowledge sharing online, the issue of saving face was less

important than expected, and attention paid to power and hierarchy seemed to be less critical than what the literature indicated. A surprising finding was that despite widely assumed collectivistic nature of the Chinese culture, the high degree of competitiveness among employees and job security concerns seemed to override the collectivistic tendencies and resulted in knowledge hoarding. The reasons for these unexpected findings could be associated with differences between face-to-face and online knowledge sharing environments, the influence of the company's organizational culture, and the recent rapid changes of the overall Chinese cultural patterns.

Chapter XVI

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Denis Meingan, KnowledgeConsult, France
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This chapter updates earlier research on the state of the art of KM tools and presents key evaluation criteria that can be used by organizations to select the applications that best meet their specific KM needs. We briefly describe tools currently available in the software industry to support different aspects of knowledge management and offer a framework for understanding how these tools are clustered based on the functionality they support.

Chapter XVII

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KM is a relatively young discipline. It has accumulated a valuable body-of-knowledge on how to structure and represent knowledge, or how to design socio-technical knowledge management systems. A wide variety of approaches and systems exists that are often not interoperable, and hence, prevent an easy exchange of the gathered knowledge. Industry standards, which have been accepted and are in widespread use are missing, as well as general concepts to describe common, recurring patterns of how to describe, structure, interrelate, group, or manage knowledge elements. In this paper, we introduce the concepts "knowledge pattern" and "knowledge anti-pattern" to describe best and worst practices in knowledge management, "knowledge refactoring" to improve or change knowledge anti-patterns, and "quality of knowledge" to describe desirable characteristics of knowledge in knowledge management systems. The concepts are transferred from software engineering to the field of KM based on our experience from several KM projects.

Chapter XVIII

Knowledge Elicitation and Mapping: Ontology as an Instrument of Design and Organizational

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This chapter is concerned with engaging end-users in the design and development of KMS. The identification, capture and use of contextual knowledge in the design of KMS are key development activities. It is argued that tacit knowledge, while often difficult to capture, can be extremely useful as contextualising knowledge to designers of KMS. A methodology was developed to combine soft systems methodology, causal cognitive mapping, and brainstorming to provide a set of knowledge requirements. The methodology appears to offer an effective platform for making sense of non-routine yet rigorous knowledge work The interventions enacted by the consultant and involving project stakeholders and end users facilitates individual, group and organizational learning through a metacognitive process of understanding the relationships and dynamics of shared group knowledge. Engagement with the methodology, in addition to causing tacit knowledge to be made explicit, enables second-order 'deutero learning', or 'learning how to learn'. The combination of activities presented forms a metacognitive process which is both a form of proactive individual and organizational learning and an endeavour which adds to organizational memory. The identification, capture and use of contextual knowledge and their use in engaging end-users in the design of KMS will result in better user-system interaction.

Chapter XIX

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Efforts to develop KM have increased in recent years. However, many of the systems implanted in companies are still not greatly used by the employees because the knowledge that these systems have is often not valuable or on other occasions, is useful but employees do not know how to search for that which is most suitable. Moreover, employees often receive too many answers when they consult this kind of systems and they need to waste time evaluating all of them in order to find that which is most suitable for their necessities. On the other hand, many technical aspects should also be considered when developing a multi-agent system such as what knowledge representation or retrieval technique is going to be used.   To find a balance between both aspects is important if we want to develop a successful system. However, developers often focus on technical aspects giving less importance to knowledge issues. In order to avoid this, we have developed a model to help computer science engineers to develop these kinds of systems. In our proposal, firstly, we define a knowledge life cycle model that, according to literature and our experience, ponders all the stages that a knowledge management system should give support to. Later, we describe the technology (software agents) that we recommend to support the activities of each stage. The paper explains why we consider that software agents are suitable for this end and how they can work in order to reach their goals. Furthemore, a prototype that uses these agents is also described.

Chapter XX

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The purpose of this chapter is to examine the requirements of KM services deployment in a Semantic Grid environment. A wide range of literature on Grid Computing, Semantic Web, and KM have been reviewed, related, and interpreted. The benefits of the Semantic Web and the Grid Computing convergence have been investigated, enumerated and related to KM principles in a complete service model. Although Grid Computing model significantly contributed to the shared resources, most of KM tools obstacles within the grid are to be resolved at the semantic and cultural levels more than at the physical or logical grid levels. The early results from academia, where grid computing still in testing phase, show a synergy and the potentiality of leveraging knowledge, especially from voluminous data, at a wider scale. However, the plethora of information produced in this environment will result in a serious information overload, unless proper standardization, automated relations, syndication, and validation techniques are developed.

Chapter XXI

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The creation and the use of knowledge have increasingly been regarded as important issues for management. A wide range of studies have investigated this topic during the past decade. Notwithstanding these contributions, very little systematic attention has been paid to the linkages between knowledge capabilities and strategy implementation. Drawing from knowledge capabilities theory and strategy implementation literature, two aspects of knowledge capabilities in an organization and their effect on strategy implementation effectiveness are investigated; knowledge process capabilities (KPC) and knowledge infrastructure capabilities (KIC). This study hypothesized that KPC affects strategy implementation effectiveness (SIE) and that KPC affects KIC. The third hypothesis proposed the effect of KIC on SIE by examining the mediating role played by KIC in linking KPC and SIE. 1,321 middle-managers were sent questionnaires via electronic mail and 162 were returned. The findings indicated the presence of a mediation effect of KIC on the relationship between KPC and SIE. This study provides guidelines for middle-managers to better understand how to develop activities of KPC and KIC for SIE. It is hoped that the results of this study will enhance our understanding of the strategic importance of knowledge in an organization, especially in the area of strategy implementation.