

SPECIAL ISSUE

Knowledge Management in Organizations

Dongsong Zhang, University of Maryland, Baltimore County, USA

J. Leon Zhao, University of Arizona, USA

**THE PURPOSE OF
THE SPECIAL ISSUE**

Knowledge is widely recognized as a primary commodity in the current knowledge-based economy. Today, the main asset of production is intellectual capital as opposed to the tangible assets that previously drove manufacturing-based markets (Kemp et al., 2001). In analogy, knowledge is as critical to the information age as oil was to the industrial age. Organizational knowledge, being the multiplicative asset, has been recognized as a key for business success in many sectors of the economy. Extracting the potential value from organizational knowledge is considered a key element in business success (Abar et al., 2004).

Knowledge management (KM) is the study of strategy, process, and technology to acquire, select, organize, share, and leverage business-critical information and expertise so as to improve company productivity and decision quality (Satayadas et al., 2001). Knowledge management embodies synergistic integration of information processing capacity and the creative capacity of human beings in order to maximize the responsiveness and flexibility of organizations. A successful organization

must be able to manage various types of knowledge and maximize its strategic value (Siau, 2000). Toward this end, there is an indisputable need to enable managers to promote knowledge sharing and to facilitate the acquisition and retention of intellectual capitals (Nah et al., 2002; Nah et al., 2005). As a result, many organizations have begun to re-examine and renovate their business strategies, processes, information technologies, and organizational structures from a knowledge management perspective.

This special issue provides a focused outlet for recent advances in knowledge management and seeks to advance our understanding of the organizational and technical issues of knowledge management in organizations. Our purpose is to stimulate more research in this area through the sharing of innovative ideas and new findings among researchers and practitioners.

**THE RISE OF KNOWLEDGE
MANAGEMENT AS A NEW
RESEARCH AREA (1980-2005)**

One way to understand how knowledge management has evolved as a research area is to examine the literature in knowledge management. We choose to

Figure 1. The surge of research in knowledge management according to INSPEC

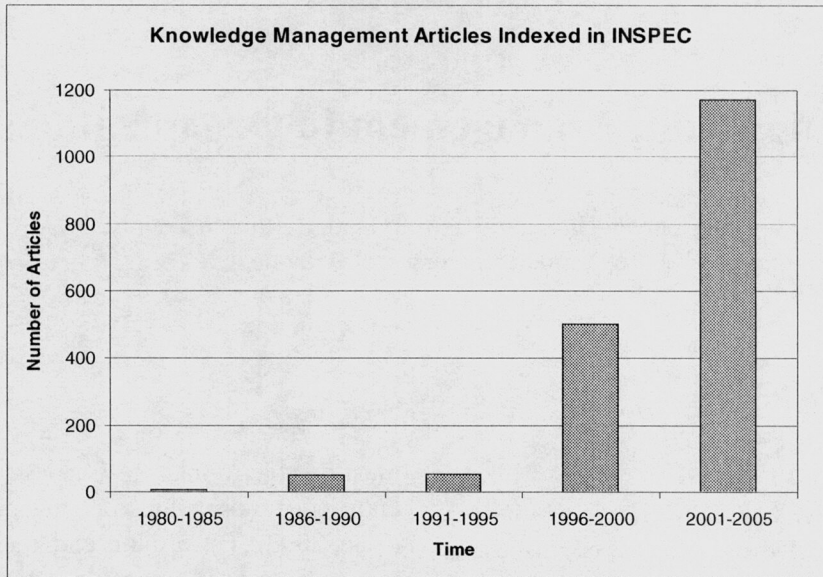


Table 1. The INSPEC queries used to derive Figure 1

Years	No. of Articles	INSPEC Queries on July 30, 2005
1980-1985	6	((knowledge management) in TI) and (PY:INSP = 1981-1985)
1986-1990	52	((knowledge management) in TI) and (PY:INSP = 1986-1990)
1991-1995	54	((knowledge management) in TI) and (PY:INSP = 1991-1995)
1996-2000	503	((knowledge management) in TI) and (PY:INSP = 1996-2000)
2001-2005	1174	((knowledge management) in TI) and (PY:INSP = 2001-2005)

use INSPEC (<http://www.iee.org/publish/inspec/>) for this purpose. INSPEC is a bibliographic database providing access to the worldwide literature on physics, electrical engineering and electronics, control theory and technology, and computers and computing. Among others, INSPEC covers about 4,000 journals including the fields of Communications, Computer Applications, Computer Hardware and Software, Information Technology, and Office Automation. From 1969 to January 2003, it accumulated more than 7,503,985 citations, 21% of which are conference contributions. Its weekly updates include about 6,000 citations. INSPEC covers many well-known IS journals such as *Communications of the ACM* (CACM),

IEEE Computer, *Decision Support Systems* (DSS), *Information Systems Research* (ISR), *Journal of Management Information Systems* (JMIS), *MIS Quarterly* (MISQ), and *Management Science* (MS).

To find out how knowledge management as a research area has come to being, we searched INSPEC articles that contain the phrase *knowledge management* in the title (Table 1). We found that the first article appeared in 1983, and there were only six such articles before 1986. As illustrated in Figure 1, knowledge management as a research area is a relatively new phenomenon in comparison to other research areas such as data processing and network management. It did not become

an important area of research until the early 1990s, based on the number of articles published. The number of published articles containing *knowledge management* in the title more than doubled from 2001 to July 30, 2005.

Note that our search results exclude articles that do not contain *knowledge management* in their titles but are, indeed, relevant. This should not be a problem for our purposes, since the trend plotted in Figure 1 should not be hampered by this query bias, assuming that the same proportions of articles are omitted throughout the search periods.

It is also interesting to note that after the first six articles found between 1983 and 1985, the next 10 years saw only a bit more than 100 articles. This shows that a new area of research may take a while to prosper. A more intriguing pursuit would be to understand this phenomenon, which we encourage others to investigate in a more extensive study.

THE TOPIC DISTRIBUTION OF KNOWLEDGE MANAGEMENT ARTICLES

Another issue on which we would like to shed some light is how the topic areas have fared in terms of the relative quantity of past publications. To explore this, we searched INSPEC for articles that contained *knowledge management* in the title and contained certain keywords related to certain topic areas. Figure 2 illustrates the number of articles in seven well-known topic areas; that is, tools/systems, modeling, organizations, algorithms, applications, management, and adoption. The queries used to derive the results in Figure 2 are given in Table 2.

It is clear that papers on tools and systems dominate the existing publications on knowledge management. The number

of publications in modeling takes the second place, followed by research on organizational issues and algorithms. Articles addressing applications, management, and adoption of knowledge are in the distant last three places. Of course, this is not surprising, since INSPEC is mainly an engineering database, although it does include major journals in information technology and management, as shown in Table 3. Note that the same articles may appear in more than one category, and we did not try to estimate the degree of overlap among different topic areas.

Note that we do not claim that our queries are completely inclusive, since there are other phrases that might have been included in the queries. For instance, instead of *economics*, we could have used *economic analysis*. However, we believe our efforts do shed some light on the distribution of research topics on knowledge management. More detailed analysis is beyond the scope of this editorial article.

WHAT JOURNALS HAVE PUBLISHED ARTICLES ON KNOWLEDGE MANAGEMENT?

In order to justify the validity of the search results presented previously, we conducted another search that requested articles containing *knowledge management* in the title and published in the following major journals in MIS. Results are shown in Table 3 and Figure 3.

It is interesting to see that DSS has published the most articles on knowledge management, while ISR has published none so far. This is not surprising, since the majority of articles on knowledge management have been on tools and systems, which is the focus of DSS, not ISR. However, this does not preclude that ISR might publish theoretical articles in knowledge management in the future. Furthermore,

Figure 2. A comparison of several well-known topics on knowledge management

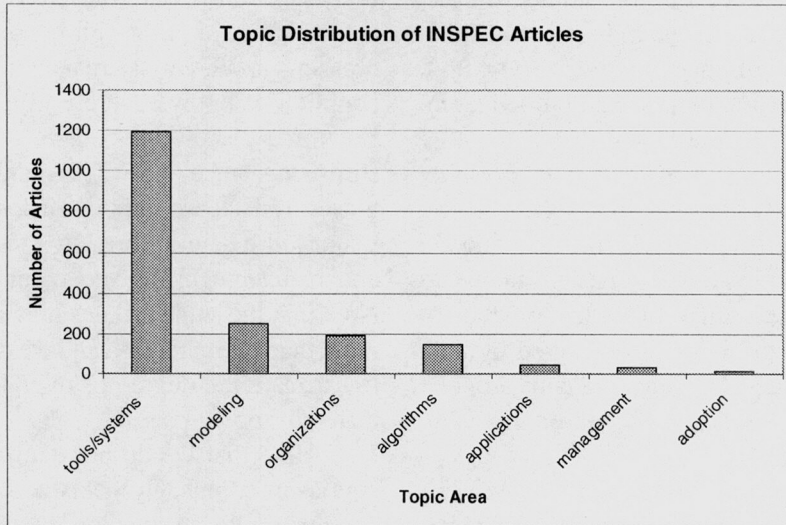


Table 2. The INSPEC queries used to derive Figure 2

Topic Area	No. of Articles	INSPEC Queries on July 30, 2005
tools/systems	1197	((knowledge management) in TI) and ((tool or tools or toolset or toolsets or system or systems or technique or technology) in SU)
modeling	251	((knowledge management) in TI) and ((model or models or modeling) in SU)
organizations	190	((knowledge management) in TI) and ((organization or organizations) in SU)
algorithms	146	((knowledge management) in TI) and ((algorithms or computing) in SU)
applications	45	((knowledge management) in TI) and ((business application) or (supply chain management) or (customer relationship management) or (enterprise resource planning) in SU)
management	32	((knowledge management) in TI) and ((economics) or (cost benefit analysis) or (engineering management) in SU)
adoption	15	((knowledge management) in TI) and ((adoption or diffusion) in SU)

the *Journal of Management Information Systems* takes second place, an indication of catering to practical IT interests.

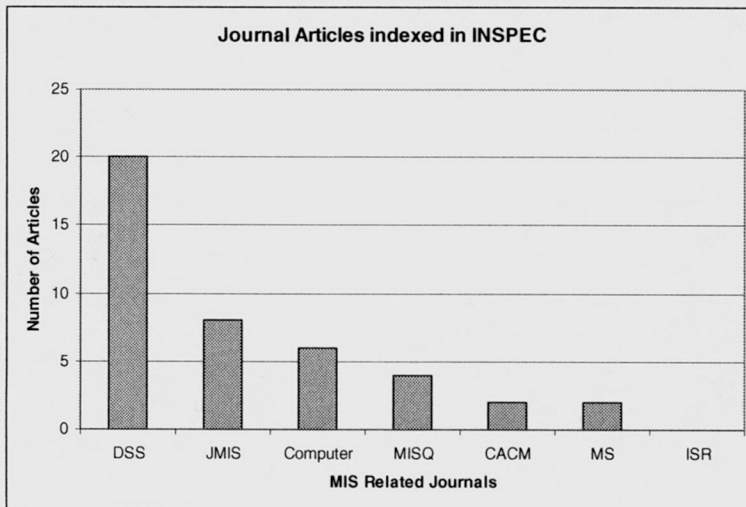
At the minimum, this simple exercise on plotting the trends in knowledge management research exposes three important facts. First, knowledge management as a research area is young and growing. Second, the dominant topic areas are develop-

ment of tools and systems, followed by modeling, organizational, and algorithmic issues. Third, the research on knowledge management has great potential to grow in top MIS journals, given the fact that this area has been advancing dramatically. We hope that this special issue will inspire more researchers to draw attention to these three facts.

Table 3. The number of articles published in major journals relevant to MIS

Journal	No. of Articles
DSS	20
JMIS	8
IEEE Computer	6
MISQ	4
CACM	2
MS	2
ISR	0

Figure 3. MIS journals and articles on knowledge management



ARTICLES IN THIS SPECIAL ISSUE

The special issue includes six fine research articles that offer a window into knowledge management. These articles focus on various issues of knowledge management in information-intensive organizations. They can be classified into two categories: research issues and opinions, and architectural and technical foundations, as introduced briefly next.

Research Issues and Opinions

Business tasks need knowledge in various formats from different internal and/or external sources. It is required to build knowledge management infrastructures that automatically and effectively can

streamline and expedite the knowledge-related activities. Rubenstein-Montano, et al. (2001) classify KM frameworks into three categories: descriptive, prescriptive, and hybrid. Descriptive approaches describe KM and identify its attributes that can influence the success or failure of an initiative; prescriptive frameworks provide direction on the types of KM procedures without providing details on how those procedures can or should be carried out; finally, hybrid approaches combine both prescriptive and descriptive approaches. There are three articles in the research issues and opinions category. They propose new theoretical frameworks or architectures for key activities in knowledge management.

King (2006) discusses the critical role of information processing in creating an effective knowledge organization and provides a unique viewpoint that is contrary to the conventional wisdom, which has tended to de-emphasize the significance of information technology in knowledge management. He proposes an architecture that links core knowledge management, intellectual property management, organizational learning, and innovation modules with information processing as the hub.

Aiming at making maximum use of various types of explicit and tacit knowledge in organizations, KM has helped enterprises to realize the importance of know-how process and its consequent benefits on knowledge transfer and decision support. Kwan and Cheung (2006) examine the knowledge transfer process by reviewing 20 recent field and empirical studies and suggest directions to the development of related technology. They develop a four-stage knowledge transfer framework and propose a knowledge transfer management system that integrates current knowledge management tools and technologies to support the needs at different stages of the knowledge transfer process.

Nilakanta, Miller, and Zhu (2006) investigate the technological and research issues in organizational memory management. They propose a novel architecture for organizational memory management and raise a number of research issues in the organizational context perspective, the knowledge retention structure, knowledge taxonomy and ontology, and organizational learning.

Architectural and Technical Foundations

There are three articles in the architectural and technical foundations group. KM implementation is costly due to the

cost of knowledge acquisition, categorization, analysis, sharing, and distribution. A KM implementation strategy must be a function of the business strategy. Otherwise, a KM initiative will fail to accomplish goals that are tangible to organizations. With the advances of information technology and increasing complexity of organizational activities, KM needs new approaches to tie more closely with the processes where the actual work of an organization takes place.

The latest advances of information technologies are shaping up enterprise knowledge management by making it easier to gather, organize, refine, and distribute knowledge. For example, new knowledge engineering and enterprise modeling techniques contribute to the identification and analysis of an organization's knowledge-intensive work. Cai (2006) studies knowledge management within collaboration processes, based on perspective modeling and analysis. He presents an approach that explicitly represents the perspectives of stakeholders and their evolution traversing a collaborative process and introduces a Web-based information system that uses the perspective model and a social network analysis methodology to support knowledge management within an organization.

Wei, Cheng, and Pai (2006) investigate the text processing techniques for annotating semantic relationships between discussion documents. They propose a taxonomy of reply-semantic relationships for documents organized in reply-replied structures and develop a technique for SEMantic Enrichment between Knowledge-sharing documents (SEEK) that automatically annotates semantic relationships between response pairs of discussion documents.

The next generation of KM systems will utilize artificial intelligence technology (e.g., intelligent agents) and knowledge

resources represented with semantic-rich metadata. The use of machine-processable semantic-rich metadata (e.g., ontologies) can enhance KM solutions by providing a content-oriented view, where knowledge items are represented in a way that facilitates interactions with the sources (Abar et al., 2004). Chen, Zhou, and Zhang (2006) propose an approach for ontology-supported Web service composition, which integrates syntactic-based and semantic-based approaches and uses ontologies to enrich semantics at both service description and composition levels. Their implementation in the corporate financial services domain demonstrates that the shared ontology helps to fulfill automated and on-the-fly service composition in particular and knowledge management in general.

We believe these six articles collectively reflect some recent research trends in organizational knowledge management, and we hope that they will lead to more research activities in this important and exciting research area. We would like to thank all the reviewers whose generous help has made this special issue possible.

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Dongsong Zhang is an assistant professor in the Department of Information Systems at the University of Maryland, Baltimore County. He received a PhD in management information systems from the University of Arizona. His current research interest includes information personalization, computer-mediated communication, web services, and mobile computing. His research has been or will be published in the Communications of the ACM, IEEE Transactions on Multimedia, IEEE Transactions on Systems, Man, and Cybernetics, IEEE Transactions on Professional Communication, Decision Support Systems, Information & Management, and Journal of the American Society for Information Science and Technology, among others.

J. Leon Zhao is professor and Honeywell Fellow of MIS, Eller College of Management, University of Arizona. He previously taught in Hong Kong University of Science and Technology and the College of William and Mary. He holds a PhD in business administration from Haas School of Business, University of California, Berkeley, an MS in engineering from the University of California, Davis, and a bachelor's from Beijing Institute of Agricultural Mechanization. He has published more than 80 articles in major conferences and journals, including Management Science, Information Systems Research, Communications of the ACM, Journal of Management Information Systems, and IEEE Transactions on Knowledge and Data Engineering. He is associate editor for Decision Support Systems, Electronic Commerce, Electronic Commerce Research and Applications, International Journal of Web Services Research, and International Journal of Business Process Integration and Management, and serves on the editorial board of Journal of Database Management. He is a program co-chair of the Second Workshop on e-Business, 2003, and the 15th Workshop on Information Technology and Systems, 2005.