KNOWLEDGE MANAGEMENT EDUCATION IN LIBRARY AND INFORMATION SCIENCE SCHOOLS: AN EXPLORATORY STUDY

MD. ROKNUZZAMAN

Ph.D. Candidate, Graduate School of Knowledge Science
Japan Advanced Institute of Science and Technology (JAIST)
1-1 Asahidai, Nomi-city, Ishikawa 923-1292, Japan
Email: r_zaman@jaist.ac.jp

KATSUHIRO UMEMOTO, Ph.D.

Professor, Graduate School of Knowledge Science
Japan Advanced Institute of Science and Technology, Japan
1-1 Asahidai, Nomi-city, Ishikawa 923-1292, Japan
Email: ume@jaist.ac.jp

Abstract

Introduction. As an emerging and multidisciplinary field, knowledge management (KM) has gained much popularity among academic and professional disciplines. Library and information science (LIS) embraced KM during the mid-nineties, and in the context of the adoption of KM, this study aims at   exploring the current state of KM education offered by LIS schools.

Method. The study conducted a worldwide online survey of 300 LIS schools to locate KM offerings, followed by a case analysis of KM Master's programs. Data were collected from IFLA World Guide to Library, Archive & Information Science Education, 2007, and from the Internet. A content analysis of the programs' homepages, course descriptions, syllabi, and individual KM courses was performed.

Results. The survey shows that only 12.3% of LIS schools have adopted KM education in different   degree programs, either integrated into or separate from the LIS degree. Most of the KM offerings were found in economically advanced regions of the world. More than 50% of the programs were offered at Master's level. The overall analysis of full-fledged Master's programs in KM suggests that LIS schools concentrated more on IT and information than on business and human perspectives of KM.

Conclusion. Important implications of the study are to define the boundaries of KM and to integrate major perspectives of KM in designing KM education programs. As the diffusion of KM education is not at a satisfactory level, the study recommends that LIS schools should respond quickly and positively to incorporate KM education and to expand their knowledge domain.

Introduction

The complex and competitive academic environment of the 1990s, caused by political, social, technological and economic drivers, has forced a drastic change in higher education world wide. Universities all over the world are now facing an imperative need to adapt and adjust to a whole series of profound changes: the increased demand for higher education in a life long learning context, the internationalization of education and research, the need to develop cooperation between universities and industry, the proliferation of places where knowledge is produced, the recognisation of knowledge, and the emergence of new expectations (European Commission, 2003). Education for library and information science (LIS) has also experienced dramatic changes, and it has become an enormously vibrant field   incorporating emerging elements like digital libraries, Internet, e-commerce, knowledge management, web/library 2.0, etc. The rapid evolution of the discipline has a profound effect on its education and practice, affecting both content and pedagogy.

One of the significant events faced by LIS was the emergence of knowledge management (KM) as a business concept during the last decade. According to Gartner Group (1997), KM is "a discipline that promotes an integrated approach to identifying, capturing, evaluating, retrieving and sharing of an enterprise's information assets". There seems to be a close relationship between LIS and KM, and some authors explain that KM is an old concept (e.g. Hawkins, 2000), and a new name for what librarians or information professionals have been doing for years (e.g. Ajiferuke, 2003), while some others consider that KM is distinct from both librarianship and information management (e.g. Davenport, 2004).

Although there exists a wide variety of perceptions and attitudes in the LIS community towards KM, most authors view KM from a more positive lens, calling for full involvement of LIS people in KM programs, arguing for the enhancement of LIS skills and competencies beyond information   management (IM), and taking advantage of new opportunities (Broadbent, 1998; Corrall, 1998; Butler, 2000; Abell and Oxbrow, 2001; Southon and Todd, 2001; Koenig, 2005; Martin, Hazeri and Sarrafzadeh, 2006; Hazeri, 2008). Responding to the exciting and emerging phenomenon of KM, some LIS schools have adopted KM as an academic program, at different levels of education. In such a context, the present study attempts to explore the current state of KM education offered by LIS schools.

Education for KM

KM as a multidisciplinary field has attracted much attention from a number of academic and professional disciplines. KM education programs vary significantly in structure and teaching modes, and with a range of diversified course contents and curriculum areas emphasizing on different disciplinary and professional perspectives (Sutton, 2007, Saito, 2006; Al-Hawamdeh, 2005; Chaudhry and Higgins, 2003, Ruth, Frizzel and Shaw, 2003).

A comprehensive topical review of global KM programs made by Sutton (2007, p. 48) identifies 79 KM programs offered by 47 institutions. The programs were considered under six broad categories of disciplines: i) Business, Commerce & Management; ii) Artificial Intelligence, Cognitive Science, Computer Science, Information Systems, Software Engineering; iii) Information and Media, Information Management, Information Science, Library and Information Studies; iv) Information Technology, Systems Engineering; v) Knowledge Science; vi) Continuing Education, other. The study finds that the highest number of programs (37%) was offered by LIS related schools, which is supported by Saito (2007),[1] but which differs from Ruth, Frizzell and Shaw's (2003) study.[2] Saito (2007) identified 40 Master's programs and found that 28 were dedicated directly to KM, and 12 were degrees in other fields with KM as an area of concentration. Table 1 shows the categorisation of schools offering KM education.

Table 1: Category of schools offering KM Master's programs

Schools	Major focus
Library & Information Science	Information-oriented perspective on KM.
Computer Science and Information Systems	Computing-oriented perspective on KM.
Management	Human or a combination of human, information and strategy-orientations.
Engineering	Computing or a combination of information, computing, human and strategy-orientations.
Education	No specific perspective of KM

Source: Saito (2007)

In a review of 37 KM courses offered by different departments and schools in universities in Australia, Canada, Singapore, UK, and USA, Chaudhry and Higgins (2003) found that 30 courses are at the graduate level, and the most courses (40%) are in the disciplines of information systems or studies, followed by business management (35%), computer science/engineering (14%), and others (11%). They explore the multidisciplinary nature of KM, and show the differences in perspectives and emphasis in the course contents and curriculum areas, varying from more technology-oriented courses in computing schools to management-oriented courses in LIS and business schools. One of the earlier frameworks of the content of real KM courses as suggested by Reardon (1998) consists of nine major areas of study

---

[1] Saito (2007) notes that LIS schools/departments were the most active in KM education, offering 14 of   40 Master's programs. p. 107.

[2] In Ruth, Frizzell and Shaw's (2003) study, KM education was predominantly offered by schools of business and engineering.

including IT, electronic resources, communications technology, management, information management, research skills, transferable skills, knowledge studies, and behavioral studies.

Objectives

Our preliminary observation suggests that KM as a field of education has been incorporated into the curriculum of LIS, and some studies have argued that LIS is in the leading position in offering KM education (e.g. Saito, 2007). The aim of the present study is to examine the status of current KM education offered by LIS schools. More specifically, the study intends to meet the following objectives:

- To identify major academic programs in KM offered by LIS schools
- To examine the learning objectives of LIS-based KM graduate programs
- To analyse the important clusters of KM graduate programs
- To compare major perspectives of KM among selected KM Master's programs
- To explore career opportunities for LIS graduates emerging from KM educational programs.

Research Methodology

The research strategy, followed in this study, was the combination of a survey and case analysis.   Initially, we conducted an online survey of LIS schools worldwide, to determine whether they provide KM education or not. To conduct the survey, the study defined LIS school as "a school, a faculty, a department, a division or a unit, which offers education in library science (LS), and/or archives, information science/studies (IS), library and information science (LIS), information management (IM), etc. related to LIS". Three hundred (300) LIS schools were selected purposively, based on their programs at the graduate level, and web access to their homepages only in the English language. To facilitate the online searching of LIS schools, we used three sources, e.g., IFLA World Guide to Library, Archive & Information Science Education, 2007; ALA Accredited List of LIS Schools; and Directory: European Association for Library & Information Education & Research. Moreover, two of the previous studies conducted by Saito (2007) and Sutton (2007) helped us to identify some KM offerings. Table 2 shows the distribution of the sample LIS schools according to five broad geographic areas.

Table 2: Geographic distribution of sample LIS schools

Geographic area	No. of LIS schools	Percentage of sample
Africa	30	10
Asia	125	42
Europe	60	20
North America	70	23
Oceania	15	5
Total	300	100

Next, we analysed cases of full-fledged Master's programs of KM offered by LIS schools. Data were collected from the descriptions of KM master's programs, syllabi and individual courses from IFLA World Guide to Library, Archive & Information Science Education, 2007 and also from the Internet whenever possible. The study used content analysis method, which is defined by Powell (1997) as "systematic analysis of the occurrence of words, phrases, concepts, etc. in books, films, and other kinds of materials" to analyse data. The study is limited in its scope, covering only 300 LIS schools, and the results based on Internet information may not reflect the reality of KM programs. The analyses of major clusters and perspectives of KM programs are also subjective in nature, and are based on researchers' own judgment.

Survey of LIS-based KM education

Geographic distribution of KM offerings

The result of the online survey of 300 LIS schools indicates that only 37 (around 12.3%) schools offer KM education, ranging from simply one course or module in KM to full-fledged KM master's or   doctoral programs. The geographical distribution of the KM offerings, as can be seen in Table 3, indicates that North America was in the leading position with 16 schools (43%), including 11 in the USA and 5 in

Canada. The next prominent area in offering KM education was identified as Oceania with 9 schools (24%), particularly 7 schools in Australia and 2 in New Zealand, followed by 5 schools (14%) in Europe (3 in UK, 1 each in Denmark, and Estonia), 4 (11%) in Africa (South Africa), and only 3 schools (8%) in Asia (1 each in Singapore, Hong Kong, and Israel).

Table 3: Geographic distribution of LIS-based KM offerings

Geographic area	No. of KM Offerings	% of KM Offerings
Africa	4	11
Asia	3	8
Europe	5	14
North America	16	43
Oceania	9	24
Total	37	100

KM education currently available

The survey shows that 37 LIS schools provided 60 KM programs/courses[3] in different degree programs, including Certificate, Diploma, Bachelor, Graduate (Master's), and Doctoral. The diffusion of KM education, as observed in Table 4, can be found in Master's degree programs, offering 31 (51.7%) of the KM programs/courses, followed by 8 (13.3%) programs/courses for the Bachelor degree, and 7 (11.7%) each for Doctoral, Diploma, and Certificate programs.

Table 4: KM programs/courses at different levels of education

KM programs/courses in place	No. of KM programs/courses	Percentages
Doctoral	7	11.7
Graduate (Master's)	31	51.7
Graduate/Post Graduate Diploma	7	11.7
Graduate/Post Graduate Certificate	7	11.7
Bachelor	8	13.3
Total	60	100

KM education at Master's level

KM education at Master's level may be categorized as M.Phil, Master's in KM, Master's in LIS/IS/IM with KM specialization or concentration, and Master's in LIS/IS/IM with one or more courses or modules in KM. Table 5 shows that of the 31 programs/courses at Master's level, only 1 (3%) was offered as an M.Phil program[4], 8 (26%) as a full-fledged MA or MSc in KM, 4 (13%) as Master's in LIS/IS/IM with KM specialization or concentration, and 18 (58%) as Master's in LIS/IS/IM with one or more KM courses or modules.

Table 5: Status of KM education at Master's level

KM education at Master's level	No of Programs/courses	Percentages
M.Phil	1	3
Master's in KM	8	26
Master's in LIS/IS with KM specialization	4	13
Master's in LIS/IS/IM with one or more courses/modules in KM	18	58
Total	31	100

---

[3] A *program* refers to an organised plan of study designed for a particular degree (e.g. MA/MSc.) consisting of a series of courses and other relevant activities.
A *course* means a set of topics or contents imparted in a series of lessons, lectures or class meetings during a certain period of time (a quarter or a semester), which is designed as a part of a particular degree.
[4] IFLA World Guide to Library, Archive & Information Science Education, 2007, includes this program offered by the Centre for Knowledge Dynamics and Decision Making, Stellenbosch University, South Africa, but the Head of the Centre has reported that their KM approach is not as same as it is understood in the library world.

Case analysis of KM Master's programs

For case analysis, the study considered only eight full-fledged Master's programs in KM, as listed in Table 6. In this section we applied the content analysis method to describe the learning objectives of the programs, to identify important keywords appearing in course titles, to categorize available course titles in clusters, to compare the emphasis on major perspectives on KM in different programs, and to explore the types of career options and opportunities for graduates shown in the programs' home pages.

Table 6: Full-fledged Master's programs on KM in LIS schools

Name of the University	*School/Dept./Faculty/Division/Program*	*Degree*
Dominican University, USA	Graduate School of Library & Information Science	MSc in KM
Kent State University, USA	School of Library & Information Science	MSc in IAKM
London Metropolitan University, UK	Department of Applied Social Science, Information Management School	MSc in IKM
Lougborough University, UK	Department of Information Science	MSc in IKM
Nanyang Technological University, Singapore	Division of Information Studies, School of Communication & Information	MSc in KM
University of Oklahoma, USA	School of Library & Information Studies	MSc in KM
Robert Gordon University, UK	Aberdeen Business School, Department of Information Management	MSc in KM
University of Technology, Sydney, Australia	Faculty of Humanities & Social Sciences, Information Program Area	MA in IKM

Note: IKM- Information & Knowledge Management; IAKM- Information Architecture & Knowledge Management

Learning objectives

The emergence of the knowledge economy, as well as trends pertinent to business environment like diffusion of knowledge companies, proliferation of digital technologies and intellectual assets and their roles in organizational design and structure, and the increasing value of knowledgeable human capital, etc. are the background motivation for many LIS programs to incorporate KM education. Analysis of the KM Master's programs suggests that LIS schools have their own strategic goals in offering KM education. The schools, however, are very much concentrated on some common objectives:

- Providing a sound understanding of the underlying concepts, theories, principles, techniques, and technologies of KM
- Understanding of contemporary issues, trends, innovations and forces for change in information and knowledge organizations, as well as better understanding of KM practices, such as learning organization, community of practice, knowledge sharing, etc.
- Developing a range of skills and competencies responding to the needs of current and future employers for information and knowledge professionals, in the fast moving and exciting area of knowledge management
- Providing graduates with advanced professional training and education in KM, and transforming them into the next generation of KM leaders to create, enhance and exploit knowledge assets of organizations, by an integrated approach to curriculum focusing on information management, technology, business management, and human and organizational perspectives.
- Enabling students to transfer their skills to numerous different work settings, in developing and implementing KM systems, and in problem solving and decision-making in the context of their professional roles and with a commitment to lifelong learning.

Important keywords appearing in the course titles

In our analysis of the curricula of eight Master's programs in KM, we find a total of 146 course titles including both core and elective courses. To understand the perspectives of KM Master's programs, this study has selected some important keywords from different course titles which appeared more than once. It is observed that (Table 7) 'knowledge management' is the most common keyword, appearing in 16 course titles, including 12 required and 4 elective courses. The main focus of these types of courses is the fundamental concepts, theories, principles, measurements, and strategies of KM. Every keyword has its own specific perspective; for example, some keywords are information-oriented, mostly related to information management. Other keywords, however, are technology, or business and management-oriented, or human and organization-oriented.

Table 7: Keywords appearing in the course titles of KM Master's programs

Major key words in course titles	*Course type*		*Frequency*
	Required	Elective	
Business and Competitive Intelligence	0	3	3
Culture and Change	1	1	2
Data Mining	0	2	2
Database Management	1	1	2
Document and Record Management	0	2	2
E-commerce/E-business	0	3	3
Indexing and Abstracting	0	2	2
Information and Knowledge	3	2	5
Information/Knowledge Architecture	2	1	3
Information Policy	1	2	3
Information Retrieval	2	2	4
Information Security	0	2	2
Intellectual Capital Management	1	1	2
Internet Technology	0	3	3
Knowledge Management	12	4	16
Knowledge Society	2	0	2
KM Tools/Technologies/Systems	4	1	5
Leadership	0	3	3
Legal/Ethical Context of KM	2	0	2
Management Information Systems	1	1	2
Networks	0	3	3
Organization and Communication	1	2	3
Organization of Information/Knowledge	2	1	3
Organizational Learning/Learning Organization	1	2	3
Practicum	1	1	2
Project Management	0	4	4
Research Methods	2	0	2
Strategies	3	0	3

Clustering of available KM course titles

The available courses of KM Master's programs have been categorized into six clusters considering their titles and curriculum contents, as mentioned in Table 8. It is observed that Information Systems/ Computing/Information Technology (IT) is the most important cluster in KM Master's programs, including 35 (24%) of the courses, followed by Information/Content Management (22%), Business and Management (16.4%), Human and Organizational Behavior (14.3%), Miscellaneous (13.7%), and KM Foundation (9.6%). Most of the programs have been designed with some basic courses which provide an overview of the concepts, theories, process and perspectives of KM, while there are some courses which can not be grouped under any specific cluster. These basic courses are included in the "KM Foundation" cluster and courses difficult to assign any cluster are included in "Miscellaneous". Among the other four clusters, IT is considered as an enabler in KM process, and LIS curricula have integrated many IT-oriented courses. Therefore, the high frequency of information systems/computing/IT related courses in

LIS-based KM programs is very usual. Information/content management, which is a core concept of LIS, has constituted a significant part of the curriculum of KM Master's programs. For many, KM is a business concept, and human capital is considered as an important part of KM, and hence, the curriculum of KM is composed of both business and human-oriented courses.

Table 8: Clusters of KM course titles

| Clusters	Examples of courses	Frequency of courses	% courses
KM Foundation	Knowledge Management, Introduction to KM, Fundamentals of KM, Principles of KM, etc.	14	9.6
Information/ Content Management	Organization of Information, Cataloguing & Classification, Taxonomies & Codification, Indexing & Abstracting, Documents & Record Management, Information Storage & Retrieval, Information Policy, etc.	32	22
Information Systems/ Computing/ Information Technology (IT)	IT Management, Database Management Systems (DBMS), KM Technologies, System Analysis & Design, Knowledge Discovery & Data Mining, Knowledge Engineering, Network Design & Management, Meta Data for Internet Resources, Internet Technology, etc.	35	24
Business and Management	Business/Competitive Intelligence, E-commerce, Business Process Management, Management Information Systems (MIS), E-publishing Marketing & Business Issues, Management of Innovation & Entrepreneurship, etc.	24	16.4
Human and Organizational Behavior	Human Capital Management, Learning Organization & Organizational Learning, Communication & Organizational Behavior, Management Techniques & People Skills, Organizational Development, Leadership, Culture & Change Management, etc.	21	14.3
Miscellaneous	Research Methods, Special Topics, Projects, Seminars, Practicum/Internship, Thesis, etc.	20	13.7

Comparison of major perspectives of KM

Except for "KM foundation" and "Miscellaneous", we may consider other clusters of KM course titles as four major perspectives of KM, namely, information perspective, technology perspective, business perspective and human perspective. In designing Master's degree curriculum, LIS-based KM programs have considered the priority of different perspectives according to their normative goals. This section compares the emphasis among the perspectives given in six KM Master's programs on the basis of credit points, credit hours, or academic units for each course. The study excludes Lougborough University and Robert Gordon University of the UK, as there is no available information regarding credit hours/points/units for the courses in their program's home pages. We also exclude the courses which are in the "miscellaneous" cluster for the calculation of credit hours.

As can be seen in Figure 1, Dominican University (DU) has given priority to the technology perspective in its KM Master's curricula, with 40% of the total credit hours, followed by information perspective (33%), and business and human perspectives, each with 13% of the credit hours. Similarly, technology perspective is emphasized in KM program at Kent State University (KSU) with a high proportion (37%) of the credit hours. Next significant perspective is human, for which 25% of the credit hours have been allotted, followed by 19% each for information and business perspectives. In case of London Metropolitan University (LMU), both technology and business perspectives are equally considered as important, with 33% of credits for each, while the figure goes down by half (17%) for information and human perspectives. Nanyang Technological University (NTU) designed its program focusing on the same proportion of academic units (25%) for technology and business, which is lower than for information perspective (31%) and higher than for human perspective (19%). Information perspective has also

been emphasized in the KM program at Oklahoma University (OU) with 37% of credit hours, higher than technology (33%), human (20%) and business (10%) perspectives. A wide variation exists among the perspectives in the graduate KM program in the University of Technology, Sydney. More than fifty percent (54%) of the credit points reflect the information perspective, 23% technology, 15% business and 8% the human perspective.

Figure 1: Comparative emphasis of major perspectives of KM
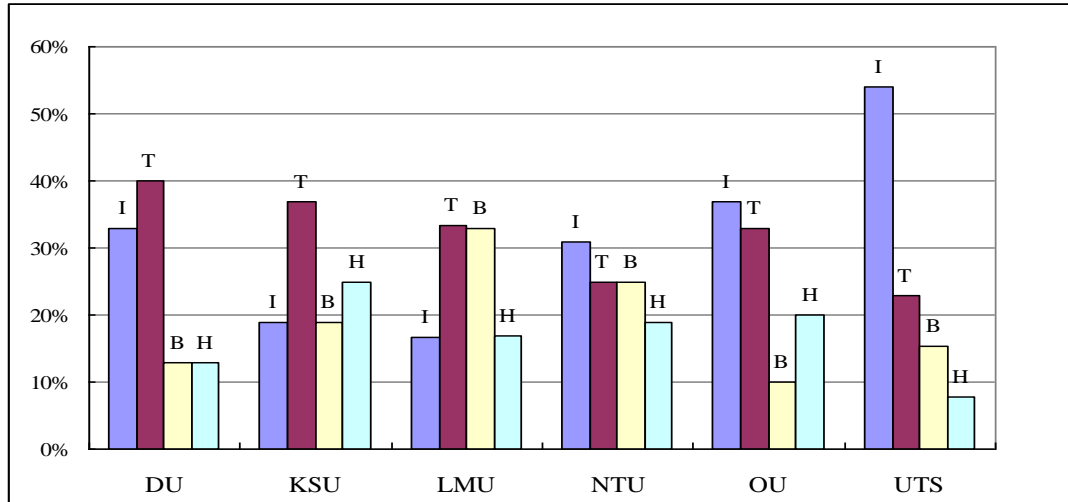
*(Note: **I**-Information perspective, **T**-Technology perspective, **B**- Business perspective, and **H**- Human perspective)*

Career opportunities

KM expands the horizon of LIS and offers new market demands, career options, and new job opportunities for the graduates (Morris, 2001; Todd and Southon, 2001; Rehman and Chaudhry, 2005; Sarrafzadeh, Martin and Hazeri, 2006). The content analysis of KM programs' home pages suggests that education for KM provides an increasingly wide range of opportunities for graduates equipped with a broad range of managerial, professional and technical skills. Thus the graduates have more options and opportunities to engage in different work environments in the public and private sectors, with interesting job titles outside the library setting. Nanyang Technological University has broadly categorised KM positions titles into three areas: knowledge-related job titles, information-related job titles, and IT-related job titles. Based on this categorisation, Table 9 lists some important positions for which the graduates can compete to access the KM job market.

Table 9: Categorization of KM position titles

Areas	Position titles
Library/Information-related position	Chief Information Officer (CIO), Content Analyst/Developer/Manager, Documentation Manager, Information Manager/ Corporate Information Manager, Information Designer, Information Analyst, Information Architect, Information Archivist, Librarian/Library Manager
Knowledge-related position	Chief Knowledge Officer (CKO), Knowledge Manager , Knowledge Engineer , Knowledge Project Manager , Knowledge Architect , Knowledge Analyst , Knowledge Leader, Knowledge Navigator, Knowledge Broker, Knowledge Gatekeeper, Knowledge Asset Managers
Technology-related position	Chief Technology Officer (CTO), Internal Communications Manager, Network Analyst/Designer, Systems Analyst/Developer, Systems Architect, Technology Manager, Web Designer.

Conclusion

It is observed from the literature that many LIS academics and practitioners have welcomed the challenge of KM, but the survey shows that only 12.3% of LIS schools have adopted KM programs indicating that diffusion of KM education in LIS schools is not at a satisfactory level. Considering the geographical distribution of KM programs, we find that the diffusion of KM education is limited to some advanced and emerging economic regions of the world including USA, UK, Australia, Canada, Singapore, South Africa, etc. We assume that the factors, like the lack of initiation, crisis in specialized faculties, lack of interest on the part of faculty members, confusion about the overlapping concept of IM and KM, lack of financial support, etc. may impede LIS schools to adopt KM programs. KM is a broad concept and it has become a challenge for LIS academics, as Hazeri (2008) finds that LIS schools are still in ambiguity about the need for, and the level of engagement with, KM education, and the way this should be achieved. However, the approaches to KM education, as can be found in some LIS schools, which have already adopted KM programs, are either integrated into or separate from the LIS degree. The frequency of KM programs at different degree levels signifies that LIS schools are more interested in KM Master's programs rather than for undergraduate education.

In designing KM Master's programs, LIS schools have emphasized different perspectives of KM differently, considering their program's mission and vision. Hence, it is found that no school provides a well-balanced coverage of information, technology, business and human perspectives of KM, except the coverage in Nanyang Technological University. The cluster analysis of course titles and the comprehensive credit hour analysis for KM perspectives lead to the same conclusion, that both information and technology perspectives are emphasized in designing KM master's program. The major implications of this study are to define the scope and boundary of KM, and to integrate KM perspectives when developing KM education programs for LIS schools. LIS graduates have excellent information management skills, but they need to gain additional skills in order to become significant players in the KM environment. This demands further education of LIS graduates, to respond to new market demands and to the changing perceptions of recruitment agencies. Considering the status of diffusion of KM education, it is suggested that LIS schools should respond quickly and positively to KM in order to expand their knowledge domain. It is also recommended to minimize the gap between LIS schools and industry with strong partnerships, so that graduates can be effective in industry positions, and can be transformed into a professional workforce equipped to meet the challenges of KM. Otherwise it will be difficult for LIS schools to survive in the competition emerging from business and IT sectors, and the students will be attracted to other disciplines.

References

Abell, A., & Oxbrow, N. (2001). *Competing with knowledge: the information professionals in the knowledge management age,* London: Library Association Publishing,

Ajiferuke, I. (2003). Role of information professionals in knowledge management programs: empirical evidence from Canada. *Informing Science Journal,* 6, 247-57.

Al-Hawamdeh, S. (2005). Designing an interdisciplinary graduate program in knowledge management. *Journal of The American Society for Information Science and Technology,* 56(11), 1200-1206.

Broadbent, M. (1998). The phenomenon of knowledge management: what does it mean to the information profession?. *Information Outlook,* 2(5), 23-34.

Butler, Y. (2000). Knowledge management- if you knew what you knew. *Australian Library Journal,* 49(1), 31-43

Chaudhry, A. S., & Higgins, S. E. (2003). On the need for multidisciplinary approach to education for knowledge management. *Library Review,* 52(2), 65-69.

Corrall, S. (1998). Knowledge management: are we in the knowledge management business? *ARIADNE-The web version*, 18, December, [Online]. Retrieved 20 March 2007 from http://www.ariadne.ac.uk/ issue8/knowledge-mgt/

Davenport, E. (2004). Organizations, knowledge management and libraries: issues, opportunities and challenges. In H. Hobohm (ed), *Knowledge management: libraries and librarians taking up the challenge (*pp. 81-89). München: K. G. Saur.

European Commission (2003). The role of universities in the Europe of knowledge. Communication from the Commission, COM(2003) 58 final, Brussels [Online]. Retrieved 8 September 2008 from http://europa.eu/scadplus/leg/en/cha/c11067.htm

Gartner Group (1997). Gartner Group Symposium: The Future of IT. ITxpo97. Paper presented at the Future of IT. ITxpo97.

Hawkins, B. (2000). Libraries, knowledge management, and higher education in an electronic environment. In *ALIA 2000 Proceedings* [Online]. Retrieved 10 November 2004 from http://www.alia.org.au/ conferences/alia2000/proceedings/brian.hawkins.html

Hazeri, A. (2008). The implications of knowledge management for library and information science education: a mixed method investigation, Unpublished PhD dissertation, School of Business Information Technology, RMIT University, Australia.

Koenig, M. E. D. (2005). KM moves beyond the organization: the opportunity for librarians. *Information Services and Use,* 25 (2), 87-93.

Martin, B., Hazeri, A. and Sarrafzadeh, M. (2006). Knowledge management and the LIS professions: investigating the implications for practices and for educational provision, *The Australian Library Journal,* 55 (1), pp. 12-29.

Morris, A. (2001). Knowledge management: opportunities for LIS graduates. Paper presented at the 67th IFLA Council and General Conference, Boston, 16-25 August.

Powell, R. (1997). *Basic research methods for librarians (* 3rd ed.). London: Ablex Publishing.

Reardon, D. F. (1998). Knowledge management: the discipline for information and library science professionals. Paper presented at the 64th IFLA Council and General Conference, Amsterdam, 16-21 August.

Rehman, S.U., & Chaudhry, A. S. (2005). KM education in LIS programs. Paper presented at the 71st IFLA General Conference and Council, Oslo, Norway, 14-18 August.

Ruth, S., Frizzell, V. & Shaw, N. (2003). Knowledge management education: an overview of programs of instruction. In C. W. Holsapple (ed.), Handbook on knowledge management (pp. 581-603). New York: Springer-Verlag

Saito, A. (2007). *Educating knowledge managers: a competence-based approach.* Unpublished PhD dissertation, Graduate School of Knowledge Science, Japan Advanced Institute of Science & Technology.

Sarrafzadeh, M., Martin, B., & Hazeri, A. (2006). LIS professionals and knowledge management: some recent perspectives. *Library Management,* 27(9), 621-635.

Southon, G., & Todd, R. (2001). Library and information professionals and knowledge management: conceptions, challenges and conflicts. *The Australian Library Journal*, 50(3) [Online]. Retrieved 10 November 2006 from http://alianet.alia.org.au/publishing/alj/50.3/full.text/conceptions.challenges.html

Sutton, M. J. D. (2007). *Examination of historical sensemaking processes representing the development of knowledge management programs in universities: case studies associated with an emergent discipline.* Unpublished PhD dissertation, Graduate School of Library and Information Studies, Faculty of Education, McGill University, Montreal, Quebec, Canada.

Todd, R. J., & Southon, G. (2001). Educating for a knowledge management future: perceptions of library and information professionals. *The Australian Library Journal*, 50 (4), 313-326.

About the Authors

Md. Roknuzzaman is an Assistant Professor in the Department of Information Science and Library Management, University of Rajshahi, Bangladesh, and a Ph.D. candidate at the Graduate School of Knowledge Science, Japan Advanced Institute of Science and Technology (JAIST), Ishikawa, Japan. He earned both BA (Honors) and MA in Library and Information Science from the University of Dhaka, Bangladesh. His areas of teaching and research interests include LIS education, information science and communication, knowledge management, digital library, innovation studies, etc.
.

Katsuhiro Umemoto, Ph.D. is a professor at the Graduate School of Knowledge Science, Japan Advanced Institute of Science and Technology (JAIST), Ishikawa, Japan. He earned a BA in Economics from Kyushu University, Japan, and a Ph.D. in Public Policy from the George Washington University, USA. He also obtained a Post Graduate Diploma in Library Science from the Junior College of Library Science, Japan. His research interest includes knowledge management, public policy, women knowledge, and regional environmental policy. He was a member of the project for the Knowledge-Creating Company that initiated the KM movement, and he translated the book into Japanese.