Examining the gap between skills needed for Knowledge Management and provision of its education in Library and Information Science courses in India

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Abstract:

This study aims to examine the skills gap that exists between required skills for KM and the provision of KM education and training offered by LIS schools in India. The study is based on qualitative research design. Content analysis and comparative methods are used as strategies of investigation. Initially, a list of required KM skills and competencies was prepared based on an extensive review of literature. Data about curricula offerings was collected from selected library schools. Course outlines were analysed and comparative method was then used to match each competency with curricula offerings. The results of the study demonstrated that LIS curricula in India are not properly covering competencies those required for KM. From the study results it may be concluded that traditional skills of knowledge organization and skills related to information technology application for managing different housekeeping operations and library services are properly covered in the curricula. But skills and competencies related to the management and interpersonal or cognitive as well as advanced information technology skills were either covered improperly or not covered at all. As no empirical study on the gap between required skills for KM and impartment of KM education and training by LIS Schools in India has been carried out before, this study fills this gap, and its findings can be considered as a reference point for restructuring courses and revision of curricula.

Keywords: Knowledge management skills; Knowledge management competencies; Knowledge management education; Curricula; India

Introduction

Knowledge Management (KM), as a multidisciplinary subject, emerged from the management consultancies in the 1990s. For examining the multidisciplinary nature of KM, a search was conducted using 'knowledge management' as a phrase in basic search option of Core Collection database of Web of Science. A total of 6088 documents published during the period 1991-2017 in 165 different subject categories were retrieved. Top five subjects that contributed maximum literature to KM include 'management', 'Business', 'information and library Science', 'computer science and information system' and 'operation research and management science'. This analysis clearly indicates a multidisciplinary nature of KM.

The interest for KM among Library & and Information Science (LIS) professionals is growing, as may be seen in the LIS literature as well as in the themes of many conferences and seminars recently held in LIS (Sarrafzadeh, 2008). IFLA has also realized the importance of KM and created a section for it (47th section) in December 2003. Since then LIS professionals have been expressing a need for a deeper understanding of the various dimensions of KM and its relevance for the LIS profession. Although KM has already been recognised as a well-established subject, LIS community is still debating on whether KM is an entirely a new subject or simply a re-branding of librarianship or information management (IM). Librarianship aims at organisation of recorded knowledge (Corrall, 1998), while KM deals with the management of both explicit knowledge and tacit knowledge (Ajiferuke, 2003).

Despite varied perceptions on KM, LIS community is viewing it from a positive angle and calling for full involvement of LIS professionals in the advancement and use of KM. But KM, as a multidisciplinary discipline, requires a broad range of skills that LIS professionals are needed for practicing of KM. It may, however, be observed that a gap exists between the skills required for LIS professionals to involve in KM and the skills those imparted to them through LIS educational courses. Responding to this challenge, some LIS schools in North America, Europe and the Pacific region, have started academic programmes in KM at different levels of education (Rehman and Chaudhry, 2005. But no such programmes are offered by LIS schools in India. However, LIS schools in India have incorporated some fundamental areas and topics related to KM in the curricula of their existing LIS courses. But it is unclear that to what extent topics on KM have been incorporated into the curricula of existing LIS courses. Therefore, this paper aims to examine the skills gap that exists between required skills for KM and the provision of its education in the courses offered by LIS schools in India.

LIS education India

LIS education in India had started as early as 1911, when the first library school was started in Baroda (Gujarat) under the patronage of Sayajirao Gaekwad III. In 1915, Punjab University, Lahore (now in Pakistan) introduced a three-month apprentice training programme for working librarians (Satija, 1993). In 1929, a three months' certificate course in librarianship was started by Madras Library Association, which was taken over by Madras University in 1931. This course was subsequently converted into a postgraduate course of one-year duration in 1937. This course served as a model for the development of LIS courses in pre-independent India. At the time of independence, there were five universities in India providing one-year postgraduate diploma course in LIS.

Just after independence, university of Delhi, under the guidance of Dr. Ranganathan, started a Master's degree in LIS in 1948 and Bachelor's degree in LIS was introduced by Prof. S.

Bashiruddin in Aligarh Muslim University in 1958-59. Six new departments of library LIS came into existence between 1956 and 1959; the figure successively rose to 19 in 1960, 20 in 1970 and 24 in 1974 (Shrivastava, 2002).

Presently in India, one year bachelor's degree program is offered by 120 LIS schools, one year master's degree program by 78 LIS schools, two year integrated master's degree program by 21 LIS schools, MPhil and PhD by 16 and 63 LIS schools respectively (Sarkhel, 2006; Association of Indian Universities, 2010). Parallel to this, some institutions such as, Documentation Research and Training Centre (DRTC, Bangalore), National Centre for Science Information" (Bangalore) and International School of Information Management (ISIM, Mysore) are imparting specialised education and training in LIS. (Chakraborty and Sarkhel, 2009).

Review of Literature
The gap between required skills and curricula offerings is common in developing countries as may be seen in some studies carried out in India and abroad (Raghavan, 2007; Nazim and Mukherjee 2013; Mahmood, 2003; Kavulya 2007). Chakraborty and Sarkhel (2009), in their study, concluded that the courses offered by LIS schools in India are not sufficient to develop proper understanding of KM as well as impart required skills among LIS graduates.

The findings of a study by TFPL (1999) revealed that the involvement of LIS professionals in KM at a strategic level was extremely rare, as these professionals lacked business understanding, the breadth of required experience, and the necessary mind-set. Raghavan (2007), on the basis of some recent job notifications on the Web, identified different skill sets for different positions that are expected from LIS professionals working in a knowledge environment. The list of proposed skills indicates that the requirements of skills are significantly different from what normally constitutes the course contents in LIS education programs at master's level. Abell and Oxbrow (2001) identified skills for KM that includes: strategic and business skills; IM skills; thinking and learning skills, management skills; communication and interpersonal skills; IT literacy; and KM awareness. Another study conducted in Canada by Ajiferuke (2003) identified team working, communication, and networking skills as the key organizational skills required for information professionals in order to participate in KM programs. Ugwu and Ezema (2010) in their study identified that cultural skills, leadership skills, strategic skills, and restructuring skills as the most required KM skills for LIS professionals. Siddike and Islam (2011) found communication, facilitation, coaching, mentoring, networking, negotiating, consensus building and team working skills that are essentially required for LIS professionals to manage knowledge in libraries of Bangladesh.

Several KM educational programs are offered by different schools of studies, including business, information systems, computer science, and LIS (Rehman and Chaudhry, 2005). Chaudhry and Higgins (2001) examined the disciplinary association of 37 KM courses, and found that the highest number of KM courses (40%) were in the discipline of information systems or studies, followed by business management (35%), computer science/engineering (14%), and others (11%). Roknuzzaman and Umemoto (2008) identified 12 LIS-based graduate KM programs. Of these, four were in the United States, three from the UK, two from Australia, and one each from Canada, Israel, and Singapore. Of the 12 programs, 8 have a M.Sc. or MA in KM, while 4 have masters in LIS/information studies with a KM concentration or specialization. Moreover, KM graduate programs vary from school to school with various course titles, curricula, and contents. They categorized KM programs into five

major areas: KM core elements, library and information studies, information system/computing, business and management, and organizational behaviour.

Purpose of the Study
As pointed out by Chakraborty and Sarkhel (2009), LIS educational courses in India had been designed to prepare human resource mainly for libraries and information centres, whereas demand for the LIS professionals is emerging from different sectors. They suggested that LIS schools in India should carry out a periodic assessment of their courses and modify curricula t accordingly. According to Malhan (2011), periodic assessment and modification in curricula would certainly help LIS graduates to work, not only for libraries and information institutions but for enterprises, consulting firms, research agencies, business intelligence agencies, banks and financial institutions and public administration offices. In fact, a gap is existed between the knowledge and skills that are imparted to LIS graduates through existing LIS courses and the skills that are required for KM. The purpose of this study was to examine the skills gap.

Methodology
The study is based on qualitative research design. Content analysis and comparative methods are used as strategies of investigation. Initially, a list of competencies was prepared based on an extensive review of literature. Data about curricula offerings was collected from library schools. Course outlines were analysed and comparative method was then used to match each competency with curricula offerings.

The first step was to identify different categories of skills required for KM. Categories of skills were constructed along the types of skills. Categories and types of KM skills which have already been identified and validated in the studies in Bangladesh by Siddike and Islam (2011), in India by Raghavan (2007) and Nazim and Mukherjee (2013), in Australia by Todd and Southon (2011) in Nigeria by Ugwu and Ezema (2010) in Canada by Ajiferuke (2003) were considered at the time of preparation of the list of required KM skills. A list of 65 skills related to KM was prepared which were then classified into six categories, namely: (i) competencies related to the basic understanding of knowledge and KM (9 skills), (ii) management and business skills (15 skills), (iii) interpersonal and cognitive skills (14 skills), (iv) knowledge processing skills (14 skills), (v) Information technology skills (13 skills). After preparation of list of different categories of KM skills needed for LIS professionals; details of the courses offered by LIS schools in India were collected. Course outlines and curricula were then analysed.

Comparative method was then used to examine the gap between the skills and competencies required for KM and topics which represent KM skills in curricula of LIS courses. The procedure for comparative analysis involved three steps process as described and used by Pasipamire (2014) in his study. These steps include description, interpretation, and comparison. The first two steps, namely, description and interpretation were used to gain a thorough understanding of required KM skills. As stated above required skills were identified from the review of literature. The same steps were also repeated to gain a thorough understanding of curricula offerings. Finally required KM skills were compared with curricula of selected LIS schools.

Analysis and presentation involved matching the results with curricula to enable examination of the gap that exists between curricula and required KM skills. An analysis of the curricula for each competency statement was carried out using a three-point scale, showing "proper coverage", "improper coverage" and "no coverage." Each category of skills and

competencies were assessed in this format in order to find out the extent of their coverage in curricula where proper coverage was a good match, improper was a bad match and no coverage meant competencies were not part of the curricula. This method was adopted from studies of Mahmood (2003) and Pasipamire (2014).

Results of the study

After preparing a list of required skills for KM, course contents of three LIS schools in India were analysed for the purpose of this study. For the present study, three LIS schools were selected, one from the category of LIS schools those offer one year bachelor's and one year master's degree programs, one from the category of LIS schools those offer two year integrated master's degree program and one from category of LIS schools those impart specialised education and training in LIS. Courses offered by selected LIS schools were examined to find the skills and competencies they offer to students.

Coverage of KM Skills and competencies by LIS Curricula in India
As shown in table 1, most of the basic skills related to KM had a weak coverage of the required skills for KM, although 'nature and different forms of knowledge', 'intellectual capital' and 'tools and techniques of KM' were properly covered by almost all schools. Concept of knowledge workers and KM process were properly covered by only one School (Schools C) and the other schools had an improper or no coverage of the skills, despite the fact that two schools have full fledge paper on knowledge management (School A and C), while one school had an unit of KM under a paper "Knowledge, Information and Communication". Knowledge sharing and its models was also properly covered by only one LIS schools (School A), whereas other schools had no coverage. Concept of knowledge-based organization and sources of knowledge had no coverage in any of the schools. This showed that despite the full fledge paper on KM in the curricula, LIS schools are lacking in imparting basic skills of KM.

Table 1: Coverage of skills and competencies related to the basic understanding of knowledge and KM

Skills	School A	School B	School C
Nature and complexity of knowledge	PC	PC	PC
Forms of knowledge	PC	IC	PC
Sources of knowledge (e.g. best practices, communities of practice)	IC	NC	NC
Knowledge workers	NC	IC	PC
Intellectual capital	PC	PC	PC
Knowledge-based organizations	NC	IC	NC
KM processes (Knowledge audit, acquisition, etc.)	IC	IC	PC
KM tools and Techniques	PC	PC	PC
Knowledge sharing models	PC	NC	NC

PC= Proper Coverage; IC= Improper Coverage; NC= No Coverage

As shown in table 2, management competencies had also a weak coverage in curricula despite their demand in work place in almost all types of organizations. Competencies and skills such as 'management principles', 'human resources management' and 'training and development' had a proper coverage in the curricula of all three schools. Competencies to do with 'system analyses, work flows and organizational routines', 'performance appraisal of employees' and 'marketing and promotion' had proper coverage in the curricula of two schools. Competencies like 'business process identification and analyses, 'leadership',

'evaluating organisation's performance', 'change management' and 'policy formulation' had a weak coverage as they are properly covered in the curricula of only one school, while other schools had either no coverage or improper coverage. Competencies related to the creation of knowledge-based assets, for the organization, and development of social networks and communities of practice had no coverage. Strategic management, that is an important area of KM, had an improper coverage in the curricula of all schools under study. Review of literature indicated that skills related to management and business is highly valued, but it is surprising to note that their coverage in the curricula of LIS schools had a weak coverage.

Table 2: Coverage of management and business skills and competencies

Skills	School A	School B	School C
Business process identification and analysis	IC	IC	PC
Creating value from an organization' knowledge-based assets	NC	NC	NC
Develop social networks and communities of practices	NC	NC	NC
System analysis, work flows and organizational routines	PC	IC	PC
An understanding of management principles	PC	PC	PC
Leadership	NC	NC	PC
Financial planning and management	PC	PC	PC
Evaluating organisation's performance	PC	NC	IC
Strategic management	IC	IC	IC
Human resources management	PC	PC	PC
Performance appraisal of employees	PC	PC	IC
Training and development	PC	PC	PC
Project management	PC	NC	NC
Marketing and promotion	NC	PC	PC
Change management	PC	NC	NC
Policy formulation	PC	NC	IC

PC= Proper Coverage; IC= Improper Coverage; NC= No Coverage

Table 3 shows the coverage of interpersonal and cognitive skills in the curricula of LIS schools. As shown in the table, most of the skills under this category had a very week coverage in the curricula of all schools. Only one competency 'ability to motivate employees' had proper coverage in the curricula of all schools. Skills like 'interviewing', 'business acumen/entrepreneurship', 'negotiation', and 'coaching', 'facilitation' and 'mentoring' had either improper coverage or no coverage in the curricula. 'Communication skills' had proper coverage in the curricula of two schools. 'Team building', 'ability to co-operate with other kinds of professionals', 'networking skills', 'building trust and relationships', 'presentation skills', 'conflict resolution' and 'negotiation' skills' were covered by one school or another.

Table 3: Coverage of interpersonal and cognitive skills and competencies

Skills	School A	School B	School C
Team building	NC	NC	PC
Ability to motivate employees	PC	PC	PC
Ability to co-operate with other kinds of professionals	NC	IC	PC
Networking skills (connecting people together).	IC	NC	PC
Interviewing skills	NC	NC	IC
Building trust and relationship	IC	NC	PC
Communication skills	PC	IC	PC

Presentation skills	IC	NC	PC
Conflict resolution skills.	IC	NC	PC
Interviewing skills	NC	NC	IC
Building trust and relationships.	NC	NC	PC
Facilitation	IC	NC	NC
Coaching	NC	NC	NC
Mentoring	**NC**	**NC**	**IC**

PC= Proper Coverage; IC= Improper Coverage; NC= No Coverage

Table 4 shows the coverage of information/knowledge processing skills in the curricula of LIS schools. In this category, skills related to the traditional knowledge organization tools such as classification, cataloguing, indexing, knowledge mapping, information retrieval techniques had proper coverage. However, skills related to the modern knowledge organization and dissemination tools such as 'taxonomy', 'ontology' and 'text summarization', had no coverage or improper coverage. 'Content management, that is an important component of KM, had week coverage in the curricula of two schools (Schools B and C). It may be observed from the data presented in table 4 that information/knowledge processing skills have comparatively better coverage in curricula. Knowledge organization is a fundamental area of librarianship and this may be the reason of covering skills related to knowledge organization in the curricula of LIS schools.

Table 4: Coverage of information/knowledge processing skills and competencies

Skills	School A	School B	School C
Knowledge repackaging	IC	PC	NC
Knowledge capturing/codification/recording	NC	IC	PC
Knowledge Mapping	PC	PC	PC
Knowledge organisation	PC	PC	PC
Classification	PC	PC	PC
Taxonomies	PC	NC	NC
Ontology	PC	NC	NC
Indexing techniques	PC	PC	PC
Automated indexing	PC	NC	IC
Abstracting and text summarization	NC	IC	NC
Cataloguing, metadata and metadata schemas, Dublin Core	PC	PC	PC
Information retrieval: techniques and models	PC	PC	PC
Content management	PC	NC	IC
Knowledge transfer and distribution	PC	IC	PC

PC= Proper Coverage; IC= Improper Coverage; NC= No Coverage

In the category of information technology competency, all the skills had properly covered in the curricula of one school (School A) except 'information systems design', which had improper coverage (table 5). However, skills related to 'ILMS software', 'digital library /knowledge repository and digital library software (e.g. GSDL, DSpace, E-prints)' had proper coverage in the curricula of all schools. Skills of 'database design and development', 'Internet publishing and Web publishing', 'networks and networking', 'Internet: networked information infrastructure', 'search engine algorithms' and data warehousing had a proper coverage in the curricula of one school or another in addition to school A , that had proper coverage of all these skills. However, advanced skills, such as 'knowledge portals: design and

development' and 'text and Web mining' had ether improper coverage or no cover in the curricula of school B and C. It may be concluded that information technology skills had a weak coverage in the curricula of school B and C as they are still imparting traditional skills in the area of library automation and digital library.

**Table 5: Coverage of Information technology skills and competencies**

Skills	School A	School B	School C
Database design and development, e.g., Microsoft Access and SQL, web database middleware development	PC	IC	PC
Information systems design (e.g. Expert system, artificial intelligence	IC	PC	IC
Internet publishing and Web publishing, HTML, Image mapping software, Animation software	PC	IC	PC
Computer software skills	PC	IC	PC
ILMS software skills	PC	PC	PC
Content management software	PC	NC	IC
Digital Library /knowledge repository, digital library software (e.g. GSDL, DSpace, E-prints)	PC	PC	PC
Networks and Networking: Designing LAN and WAN	PC	PC	IC
Internet: networked information infrastructure	PC	PC	IC
Knowledge portals: design and development	PC	NC	IC
Web user-interface design and evaluation	PC	IC	PC
Search engine algorithms	PC	NC	PC
Data ware housing	PC	PC	NC
data mining	PC	PC	PC
Text and Web mining	PC	NC	NC

PC= Proper Coverage; IC= Improper Coverage; NC= No Coverage

Overall Coverage of Skills and Competencies in Curricula of LIS schools
Figure 1 shows the school-wise coverage of KM skills and competencies in the curricula. In the curricula of School A, 60 percent competencies had proper coverage, around 17 percent had improper coverage and 23 percent had no coverage. In the curricula of School B, 35.38 percent competencies had proper coverage, 24.62 percent had improper coverage and 40 percent had no coverage. In the curricula of School C, 58.46 percent competencies had proper coverage, 20 percent had improper coverage and 21.54 percent had no coverage. The analysis indicates that LIS schools those offer specialized education and training program and two years integrated master degree program had comparatively better coverage of KM competencies than schools those offer one year bachelor and one year master's degree programs.

Figure 2 shows the overall coverage of KM skills and competencies in the curricula of all the LIS schools under study. Around fifty one percent of the competencies had a proper coverage in the curricula. Twenty percent skills and competencies had improper coverage, while remaining twenty eight percent were not covered at all in curricula.

Figure 1: School-wise coverage of KM skills and Competencies in curricula

Figure 2: Overall coverage of KM Skills and Competencies in Curricula
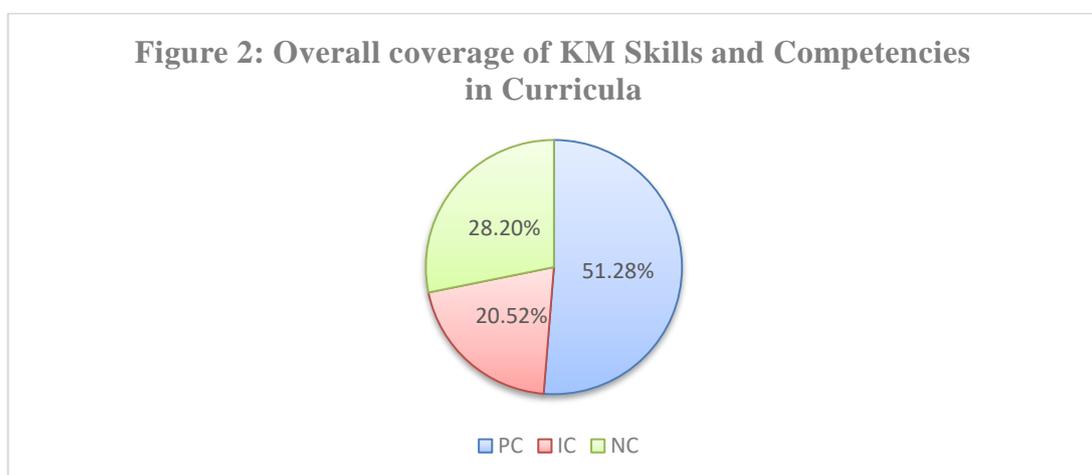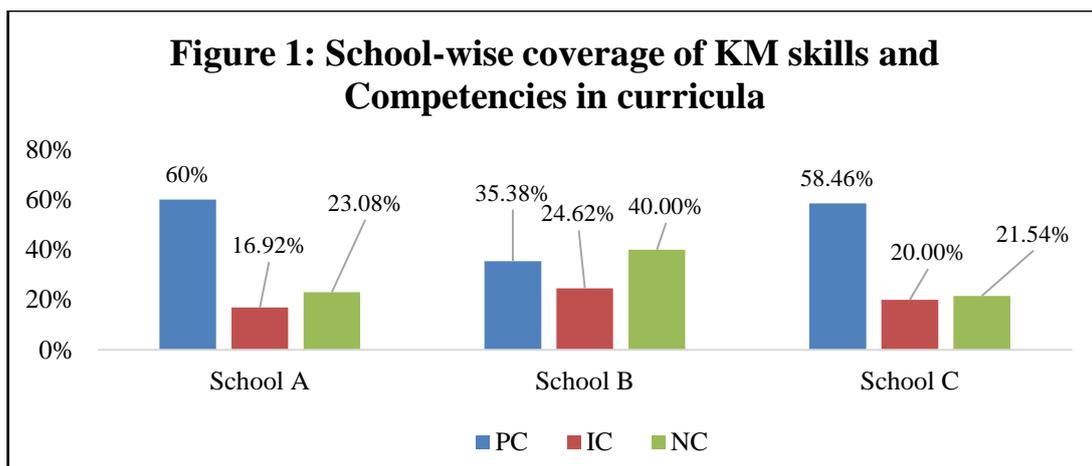
Discussion and conclusion

The growing demand for KM created an enormous opportunity for LIS professionals. However, LIS education and training programs in India do not seem to be properly headed to such objectives. LIS schools in India are slow in restructuring of their courses as well as in revising their curricula. Husain & Nazim (2015) had found in their study that LIS courses in India were outdated and lacking the provision of KM education and training for LIS graduates. Further, based on the findings, they made suggestion for restructuring of LIS courses. A study, in Bangladesh, by Siddike and Islam (2011), on the requirements of KM competencies among information professionals in the libraries/information institutions of Bangladesh, has also suggested for introducing KM course(s) at graduate and postgraduate level by different departments of Information Science and Library Management in Bangladesh. Although a few schools in India are offering courses in KM, but some of the important areas of KM are missing from their curricula. An earlier study by Saroja (2007) has also reported improper coverage of IT and generic skills in the curricula of LIS Schools in India. However, she found proper coverage of management, technical and resource building skills in the curricula of LIS schools.

The results of the study demonstrate that LIS curricula in India are not properly covering competencies those required for KM. From the study results it may be concluded that traditional skills of knowledge organization and basic skills of information technology application for managing different housekeeping operations and library services are properly covered in the curricula of LIS schools in India. But skills and competencies related to the management and interpersonal or cognitive as well as advanced information technology skills either covered improperly or not covered at all. Although some skills had proper coverage in curricula, but the extent of the coverage demonstrate that LIS curricula in India were not properly meeting the demands of the market. The reasons for this, as indicated in the review of literature, are that curricula were outdated, very narrow and lacked alignment to the needs of the job market.

Therefore, based on the results of the study, it is recommended that LIS schools and the profession at large must identify the job requirements for LIS professionals and review and redesign the curricula in line with the market demand. Emphasis should be given to fundamental areas of KM, management, interpersonal and cognitive skills that would give LIS graduates an opportunity to work in knowledge intensive organizations. LIS schools in India need either to restructure the existing curricula or introduce new courses in KM for the impartment of KM education and training to LIS students. Besides the involvement of LIS schools in KM education and training, professional associations and organisations, such as Indian Library Association, Academic Staff Colleges, INFLIBNET centre and NISCAIR, may introduce short-term programmes and workshops for LIS professionals to impart skills in KM. As no empirical study on the gap between required skills for KM and impartment of KM education and training by LIS Schools in India has been carried out before, this study fills this gap, and its findings can be considered as a reference point for restructuring courses and revision of curricula.

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