



Relevance of the Rising Job Market for LIS Professionals versus Competencies Needed with Reference to Indian Context

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Abstract

Purpose: The study attempts to understand the changes required for library and information science profession in view of the present job market. The paper tries to answer pertinent questions like whether the training imparted in the teaching departments of library and information matches the competency requirements in the job market or whether course revision really look into the required competencies.

Design/Methodology/Approach: Survey method and content analysis is used to arrive at the objectives of the paper. To collect data for the expected competency requirement skills of LIS professionals from the perspective of various LIS professionals, a web-based questionnaire was designed. The questionnaire was released through various prominent India-specific discussion groups and forums. Different course titles and course contents from different departments running full-fledged full time Master of Library and Information Science courses in India were collected which were either downloaded from the website or a soft copy was collected through request via email. The syllabi of 45 departments were shortlisted and the curricula were then downloaded and entered into a database to measure the frequency count of the course content and related areas.

Limitations: The area of coverage for studying the LIS curricula is restricted to only 45 departments offering library and information science courses in India. University departments teaching library and information were selected on the basis of two criteria: the department offering a full fledged Master of Library and Information Science course of two years duration or equivalent, and the latest syllabus of the department that qualifies the above condition with all the course content being displayed on their website. The study is also limited to academic and corporate libraries.

Findings: It is evident that there is an ever widening gap between the competencies required at the job market and the course structure. The paper also suggests ways to bridge the gap between the two.

Keywords: Library Information Science Professionals, Job Market, Skills, Competencies, Course Content, Curriculum, Syllabus.

Paper type: Survey cum Research

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Introduction

Over recent years there has been considerable discussion and many publications regarding changes necessary in library and information science (LIS) education. In both national and international contexts, LIS educators have acknowledged the need for and importance of designing approaches to education that are responsive to the rapid and ongoing technological change of the evolving information age, and developing dynamic curricula that accommodate the demands of an increasingly broad and diverse employment landscape. The changes in context, technologies and organizational approaches have changed roles and functions of all types of LIS organizations. In a workplace, the librarian is usually a professional who is trained and educated to deal with information in a wide variety of formats and settings (**WordiQ, 2010**). Apart from basic IT skills, a trend is starting to emerge whereby the LIS professional is expected to have advanced IT skills and proficiency in areas such as web development as distinct from web design skills, computer hardware, integrated library systems, and the internet (**Batool & Ameen, 2010**). This trend has led to enormous changes in the LIS job market. Changes can be noticed in job titles, knowledge and skills requirements, educational requirements, and in the experience and attitudes required in the LIS workplace. New roles demand fresh set of competencies from the professionals who have to work in LIS organizations. In this context however, the attempt to satisfy the growing need for technological proficiency, which made in road into the work environment of different sectors like corporate and academics, appears to have been a non starter in Indian context. In such a case, the curriculum of LIS education stand out as the main marker of the training imparted to the library and information professionals for basic essential skills and knowledge to be qualified in the field and also to meet the challenges brought about by the dynamic information society. The published literatures revealed negative tendencies and slow pace of changes in the curriculum. No efforts are made in the national level to prepare a syllabus that took into consideration the global or national necessities of the market and thereby implemented ever since the Curriculum Development Committee (2001) modular curriculum was framed by the University Grant Commission (UGC) The various significant changes in the profession necessitates a high demand to structure a market oriented futuristic curriculum wherein the expectations are aligned with the job market and the required skill sets are introduced. **Malekabadizadeh, Shokraneh and Hosseini (2009)** observes that the essential role of librarians and information scientists in providing access to information for development means that LIS departments must provide dynamic educational system which necessitates basic changes in

the curriculum. In addition, the curricula should include skills related to designing, consulting, and improving information systems. New course titles have been introduced in many countries in which regular updates of the curriculum establish relevancy with the competencies required for the job. The job market demand demonstrated an increased requirement of Information Communication Technology (ICT) applications and managerial skills. The rising job market trend also demonstrated an increasing pattern of requirements of the emerging information communication technologies in juxtapose with cutting edge skill in subjects like computer science, mass communication and management studies. Employers are now looking for library and information science professionals who are well versed with scientific and methodical skills of management techniques to provide the best service possible to satisfy their clients.

Review of Literature

There is an extensive literature on studies focusing on the extent and vitality of the job market for LIS professionals and competency skills desired and or required by employers but studies in the Indian context were few and sparse. A good number of studies worldwide have indicated that many approaches have been employed in different countries to analyze LIS job requirements for assessing the content of the required job as well as competencies desired over the years. Although the studies have been reported from different countries, these appear to report similar findings (**Ferreira et al, 2007; Flood, 2003; Kavulya, 2007; Lee & Fang, 2008**) which sought to examine the job market for library and information science professional's vis-à-vis the LIS education programmes. Without exception the studies suggest that the information-related job market is diversifying and that there is a gulf between knowledge and skills acquired in LIS schools and those required by the job market. It does indeed appear that the concept of core competencies is increasingly being taken into account while employing especially by the productive sector of the economy. **Edegbó (2011)** states that ICT application is a key factor to relevance in the scheme of things in the 21st century. A good number of posts of LIS professionals are already in the catch hold of technological experts. **Khan and Bhatti (2012)** very rightly concludes that the technology demands high level of technical skill set from library professionals in order to make maximum use of new technological tools for providing effective and better services to the users. Some studies have tried to examine the library and information science curricula from different perspectives (**Callison & Tilley 2001; Cronin, Stiffler & Day, 1993; Chu 2006; Kousha & Abdoli 2008**). **Marion (2001)** studied the current requirements for technologically oriented jobs

through an analysis of 250 online academic library job advertisements posted during 2000 and found that technical skills, interpersonal and behavioural skills and service delivery competencies were dominating requirements in the LIS profession. **Varalakshmi (2006)** in her advertisements based observation on Employment News (Oct. 2004 to Sept. 2006) revealed that there were only 51 job announcements for LIS personnel (excluding recruitment of Trainees by Special Corporate/Public sector resulting to few hundred), whereas, the production of LIS manpower in algebraic numerals was much more than what was expected. **Raghavan and Agarwal (2006)** did two studies to examine the nature and complexion of the emerging information job market based on the recent job notifications on the web. The study gives an idea of the nature of changes that have taken place in terms of skills and knowledge expected of potential recruitments in the traditional job market and the nature of job positions. In today's competitive world, the theoretical knowledge of academic subject is not enough for LIS graduate to survive. The graduates will have to develop competencies to meet the challenging as well as changing needs of employers/users (**Kumar, 2010**). **Grimes and Grimes (2008)** make use of more advanced statistical methods than most other studies to analyze the MLS degree's role in academic libraries over a thirty-year period. They examined how various job characteristics and requirements correlated with the MLS requirement over time. **Deeken and Thomas (2006)** tracked changes in technical services job ads since 1995. Their methodology provided some useful models for the study. The present study is also of a similar nature wherein a step has been taken to study the existing LIS curriculum and expected competency requirement skill set based on a web based survey in order to bridge the gap between the two. On the basis of the published literatures on topics of similar nature, content analysis method is found suitable for the study.

Operational Definitions

Some of the terminologies used in this paper are not necessarily the popular usage of the term and therefore, a bit of elucidations on the usage sense in are necessary. Terms like course title, curriculum, course content, competency, and syllabus are used throughout the paper. These terminologies, to a certain extent, are interlinked in concept. Working definitions of the said terminologies are given here to bring about conceptual clarity.

- The term 'title' refers to the main heading for a particular area of specific contents used to denote the course contents.
- 'Course contents' in this study, means different course contents covered under a particular course title are studied elaborately to

identify any new concepts which appeared within individual course contents.

- The concept 'Curriculum' refers to a list of courses or modules offered in a programme.
- The term 'syllabi' is not equated with a curriculum. In this study syllabi of different curricula are studied to understand the course contents they cover.
- The term 'competency' as stated by **Webber (1999)** in "Competencies for Information Professionals" rightly defined as "the set of knowledge and skills that enable an employee to orient easily in a working field and to solve problems that are linked with their professional role". In this paper competency is synonymously used with abilities and skills.

Objectives

The paper is an attempt to address the issues relating to the relevance of Library and Information Science education with the competency requirement in the market (i.e. job requirements in the recent past). Therefore, the specific objectives of the study are:

- To identify the required core areas not found in the existing syllabus of LIS in India and the widening lacunae between market requirement and course structure.
- To analyze the skills and knowledge requirements in the form of competencies that are expected from the Library and Information Science professionals employed in various libraries.
- To study the expected skills required for new designations that required LIS graduates.

Material

The data for the study was collected progressively to identify the different course titles and course contents from different departments running full-fledged full time Master of Library and Information Science courses in India. University departments teaching library and information Science were selected on the basis of two criteria:

- The department offers a full fledged Master of Library and Information Science course of two years duration or equivalent, and
- The latest syllabus of the department that qualifies the above condition with all the course content being displayed on their website.

Altogether, the syllabi of 45 departments were shortlisted and the curricula were then downloaded and entered into a database to measure the frequency count of the course content and related areas. Similarly, to collect data for the expected competency requirement skills of LIS

professionals from the perspective of various LIS professionals, a web-based questionnaire was designed. The questionnaire was released through various prominent India-specific discussion groups and forums. The questionnaire included factors like requirements in the course content with new titles e.g. expected course contents required to contend the ever changing information society. The professionals were subjected to rank the expected course work on a scale of 1 to 10. In addition, the user opinions on desired new course contents were also collected in the same questionnaire. The technology competency skills used for the survey was adapted from "Core Technology Competencies for Librarians and Library staff" edited by (Thompson, 2009) and used by Diane Neal (2004). This questionnaire was emailed individually to a total number of 78 library and information science professionals from different parts of India and the rest through LIS forums and groups.

Data Analysis and Discussion

Exactly 41 course titles with 87 numbers of LIS course contents were analyzed from 45 curriculums of LIS departments throughout India. The curriculums that were considered for the study were updated between 2001 to any time till 2009. First of all the required new and unique course titles along with related course descriptions were extracted and observed to discriminate any outline in the LIS curriculum. After dragging out the new and unique course offerings from all the 45 LIS curricula, the remaining compulsory course titles along with contents were grouped according to their subject contents for displaying an overall scenario of LIS curricula. Content analysis method was used for the analysis to make a quantitative study of the number of occurrences of different new titles and course contents of the selected LIS curricula taken for the study. It is observed that course contents represented the courses imparted as a direct preparation for job in LIS profession and often highlight the job-related skills that students should develop and acquire good employment prospects.

On the other hand, 103 completed responses were received from different LIS professionals on the web-based questionnaire. These respondents' feedback helped in finding out different significant factors that were crucial for the study. Different areas of relevance, which were expected in the current job requirement, were determined. In addition, importance on knowledge of various technological skills, which have a direct impact in today's role of LIS professionals in different set ups have been identified based on the survey. Besides questionnaire, respondent comments were gathered on various other significant skills and qualities not on the list which they considered very important for new information professionals to enhance the employability of LIS graduates.

The majority of the respondents possess Master of Library and Information Science (MLISc) degree. A total of 93 of the respondents have obtained MLISc and 31 of them have completed up to the level of Bachelors of Library and Information Science (BLISc). In case of other post graduate qualifications which are offered after the MLISc, 42 of the respondents obtained Post Graduate Diploma in Library Automation and Networking (PGDLAN) and Master of Philosophy in Library and Information Science (M. Phil). Among the respondents, 21 of them completed PhD in library and information science. The various designations occupied and informed by the respondents were Librarian, Deputy Librarian, Asst Librarian, Knowledge Manager, Documentation Officer, E resource Manager, Library Manager, Content Manager, Consultant, Consortia Manager, Library Officer, Information scientist, Library assistant, Technical assistant, and Resource Manager.

Subject analysis of LIS course structure

A total of 25 new and unique course titles considered to have more relevance in the present job market identified from the course titles of the 45 LIS curricula were selected for the study. As the LIS course titles and course descriptions vary from curriculum to curriculum, the names listed in the table below and its descriptions represent broad or closest or synonymous terms and not necessarily the exact terms found in each curriculum. Those titles, which were referred to as new and unique, are not altogether new concepts but the new insertions made in the curricula in the process of regular revision of the courses owing to requirements in the market.

Table 1: New Course Titles with Course Contents

Course Title: Course description	Frequency
Digital Libraries: Digital libraries, Architecture, tools and agents for digital libraries, Resource discovery, Information retrieval access and use, Digital library applications, Framework for digital libraries, Study of digital library software, Planning and design of digital libraries	41
Networks, Networking And Consortia: Networks, Network Architecture and Protocols, Network media and hardware, Communication networks, Library networks, Consortia, Criteria for selection of consortia, Consortia initiatives in India	35
Internet And Electronic Publishing (Theory):Internet basics-communication and data mining, Internet for library applications, publishing, Mark up languages, Multimedia content creation, Design and development of web pages and documents, Cyber laws	26
Technologies For Information Management (Theory): Micrographic technology, Multimedia technology, DBMS, Winisis and Ms Access, CD-ROM technology, Communication technology, Information technology, Barcode, RFID and Wi-Fi technology	25

Course Title: Course description	Frequency
Technologies For Information Management (Practical): Hands on experience and work assignments with selected CD ROM databases, Design and development of databases using Winisis and Ms access	24
Informatics And Scientometrics. Describing literature, Authorship and collaboration, Citation analysis, Obsolescence, Cybermetrics (Web metrics)	22
Internet And Electronic Publishing (Practical): Acquaintances with the internet sources and services, Acquaintances with the search engines, search options and search techniques, Web page designing and publishing on net	11
Internet Resources	9
Technical Writing (Practical): Work assignments on technical writing, hands on experience and work assignments with software packages, Work assignments on business communication.	6
Technical Writing (Theory): Basics, processes, writing style, Technique	6
Personality Development and Communication Skills: Stress management, Time management, Communication skills and Writing skills.	5
Health Science Information Sources	4
Information Sources In Agricultural Science (Optional)	4
Information Sources In Social Science (Optional)	4
Multimedia And Institutional Repositories	4
Content Analysis	3
Emerging Technology in Libraries: Smart card, RSS, Library security technology	3
Information Sources and Products in Science & Technology	3
Marketing of Information: Management consultancy	3
Business Information System	2
Web 1.0, Web 2.0 & Web 3.0: Detailed study of components of web 1.0, web 2.0 and web 3.0	2
Blogs, RSS, Wikis, Bookmarks In Library And Information Centres	1
Information Sources In Natural Sciences (Optional)	1
Preservation And Conservation Of Archival Documents And Digital Documents	1
Multimedia Application Development: Multimedia concept: Application in library and information centres, Image representation and processing, Multimedia information delivery	0

Digital library appears to be the most incorporated course content closely followed by Networking concepts and consortia. The recent spate of government funded digital library projects and consortia based electronic resource subscription may have impacted the incorporation of such course content. The impact of the said initiatives is also evident from the fact that the course contents like "Internet and Electronic Publishing" and "Technologies for Information Management" are also the most incorporated course content in the recent revisions. No matter how small the impact of the job market may be, at least the policy level impact is visible in the course content.

The rest of the course titles that have been extracted from the LIS curricula are listed in table 2. This course titles and their contents were mainly of the traditional nature, which can be considered as a base to the curricula. Subjects like cataloguing, classification; academic library system, special library system, information storage and retrieval,

information science, information sources and services, computer fundamentals, library and users, research methods, library automation and library management appear almost in 80% of the syllabus as per the analysis. But whether the course contents like cataloguing, classification etc were available in traditional form or it is available in automated and digital form still remains unclear as the curriculum cannot give a clear picture on what forms the courses were taught. Also there is variation of inclusion and exclusion of different concepts from curriculum to curriculum under different course titles.

Table 2: Traditional Course Titles with Course Contents

Course Title and Course description	Frequency
Foundations Of Library And Information Science: Library as a social institution, Library, Information and society, Library development, Normative principles of LIS, Library legislation, Documentation centres and information systems, Library and Information profession, Public relations and extension activities	45
Fundamentals Of Computers (Theory): Computer, Computer architecture, Computer software: Application software and system software, Data representation, File organization, Programming languages: overview, Software packages	45
Information Retrieval (Library Cataloguing Theory): Library catalogue, Catalogue entries, Normative principles, Library catalogue codes, Subject headings, Limited cataloguing, Bibliographic description and control, Trends in cataloguing	45
Information Sources And Services: Information sources, Primary, secondary and tertiary sources (Print and electronic), Non documentary sources, Electronic sources, Reference service, Information service	45
Knowledge Organization (Library Classification Theory): Universe of subjects, Library classification, Theory of library classification, Postulation approach to library classification, Scheme of library classification, Designing of depth schedule, Role of library classification in Internet Resource Description and discovery, Ontology and automatic classification	45
Management Of Library And Information Centers: Management, Human Resource Management, Financial Resources Management, Library housekeeping operations, Reports, System analysis and design, Planning, TQM	45
Fundamentals Of Computers (Practical): Hands on experience with MS DOS & MS Windows, Hands on experience with MS Office	44
Information Science: Information, Information science, Information generation, dissemination and utilization, Information and communication, Information society, Information policy, Economics of information, Knowledge Management	44
Information Retrieval (Library Cataloguing Practical): Cataloguing of simple, compound and complex books, Cataloguing of non book materials, Cataloguing of e resources (According to MARC 21 and Dublin core)	43
Knowledge Organization (Library Classification Practical): Classification of simple, compound and complex subjects using DDC, Classification of simple, compound and complex subjects using UDC	43

Course Title and Course description	Frequency
Library Automation (Theory): Introduction to library automation, Infrastructure requirements, Library automation sub systems, Library software packages, Web based library automation, Computerized library and information services, Library automation in India, Trends in library automation	43
Research Methods: Research, Research design, Research methods, Research techniques and tools, Sampling design and techniques, Data analysis and Interpretation, Research reporting and evaluation, IS research, Metric studies and style manuals	42
Library Automation (Practical): Acquaintance, hands on experience and work assignments on SOUL, Libsys, CDS/ISIS, Winisis, SLIM, NewGenLib, Koha	40
Information Retrieval, Repackaging And Processing (Theory): Information retrieval system, Abstracts and abstracting, Indexing, Information retrieval process, Information retrieval models, Evaluation of IR System, Trends in IRS, Repackaging and consolidation	39
Library And Users: Information users and their information needs, User studies, Techniques of Library and Information centre: Use studies, Information literacy, Methods and techniques – Lecturers, Tutorials, Global perspective, Information literacy and lifelong education – learning	34
Information Retrieval, Repackaging And Processing (Practical): Preparation of informative and indicative abstracts for micro documents following guidelines of abstracting, Preparation and compilation of various information products, Preparation of index entries and creation of indexes, Construction of a thesaurus	31
Academic Library System	29
Special Library System: Information Resource development and management, Organisation of information resources, Resource sharing, networking and consortia, HRM, Financial Resource management, Spc.Mngt.	21

Job requirements

To study the expected Job requirement of the information industry from the LIS professionals, the respondents ranked a set of on-the-job competency skills on a scale of 1 to 10, the lowest requirement being 1 and the highest 10. These set of skills are skills practically required in their job. As evident from table 3, the skills which respondents accorded as “highly required” are special skills directly related with library and information science. The skills not directly related to the job of LIS professionals are accorded marginal importance. The division between competencies directly related to the job and other competencies, as demarcated in the table, is well defined. This could only mean that LIS professionals’ competency requirements are well within the perimeters of library and information science. The perceived requirements being mostly operational and not managerial underscored the urgency for attainment of such competencies.

Table 3: Required Competency for LIS Professionals

Skills Required at Workplace	Low Requirement → High Requirement										Total Response in %
	1	2	3	4	5	6	7	8	9	10	
Online searching skills	10	4	1	0	1	2	3	3	13	48	83
Thorough knowledge of Internet/Digital systems	10	4	1	0	2	5	0	7	18	38	83
Advance library Software	7	4	3	2	3	2	6	3	18	38	84
Digital library project skills	7	5	4	1	2	0	4	8	18	38	84
Content management skills	9	2	3	2	1	0	4	8	17	38	82
Computer skills (including hardware and software)	12	2	2	0	5	2	6	7	16	36	85
Database management	9	4	3	1	2	1	5	7	18	36	84
Thorough knowledge of e-resources, mark up languages and Dublin core	10	5	1	1	4	3	6	7	17	34	85
Information storage and retrieval	9	5	0	0	3	2	1	12	17	34	81
Integrated library automation skills	7	7	2	1	3	2	2	7	23	31	83
Web knowledge	11	5	3	4	3	4	4	10	18	26	85
Communication and interpersonal skills	16	5	1	3	5	8	3	14	13	21	86
Managerial skills	12	4	3	3	7	9	10	14	12	14	85
Leadership skills	15	9	5	6	11	5	9	9	6	12	84
Office communication , report writing skills	18	6	11	7	8	7	6	5	9	11	85
Research skills	11	16	5	7	11	5	7	3	9	11	83

Skills Required at Workplace	Low Requirement → High Requirement										Total Response in %
	1	2	3	4	5	6	7	8	9	10	
Marketing LIS services	5	8	13	10	8	5	11	5	7	11	81
Are course content related to practical approach	9	2	5	4	14	20	13	5	2	10	82
Presentation skills	10	10	8	8	12	7	8	8	5	9	83
Interview skills	13	21	5	9	10	7	3	7	6	5	84
Programming skills	8	5	5	8	17	11	10	8	6	5	81
Foreign language	10	7	15	11	8	7	9	5	4	5	79
Other (please specify)	0	0	0	0	0	0	0	0	0	0	0

*Note: Requirement Scores are in % out of 103 Responses

Information technology related professional competencies requirement

Library and information science is no doubt a technology based profession. Table 3 shows the job requirements of library professionals are skills pertaining to information technology. To understand this expected technological competencies required from library and information science professionals in the job market, respondents were made to rank a set of options. The feedbacks from the respondents are analyzed below in Table 4.

Table 4: Competencies in Information Technology

Answer Options	A	B	C	D	E	F	Total Response
Computer operating systems (Microsoft windows, Mac OS)	85	13	1	0	0	1	99
Basic PC troubleshooting	72	21	2	1	0	0	96
Computer basics	68	24	3	1	0	2	98
Computer security (antivirus, anti-spyware software)	64	27	5	2	0	0	98
Digitizing/scanning of printed resources	60	30	7	0	0	1	98
Database construction and maintenance (Access, My SQL)	50	37	9	0	0	1	97
Advanced PC troubleshooting and maintenance	49	35	9	4	1	0	98
Office productivity software	47	40	4	1	1	1	94
Wired &/or wireless networking configuration & troubleshooting	36	43	11	4	2	1	96

Answer Options	A	B	C	D	E	F	Total Response
Scripting languages (Perl, PHP, JavaScript)	31	32	20	5	0	5	93
Server administration (Web servers/ILS servers, network drives)	31	25	29	11	0	4	99
Photo editing/digital imaging software	24	22	41	9	0	0	96
Object-oriented programming language (Visual Basic, Java)	20	37	27	3	0	8	95
Special needs/ adaptive technologies for ADA patrons (JAWS, Zoom text)	19	32	34	5	4	2	95
Average Rating	44	31	15	4	1	1	
Total number of response							99

A = very important, B = somewhat important, C = not very important, D = not at all important, E = don't know, F = not applicable

Most of the competency options are considered as “very important” or “somewhat important”. Though 60 percent of the respondents felt that “digitizing/scanning of printed resources” are “very important”, related competency like “photo editing/digital imaging software” is accorded with 41 percent of “not very important”. This contradiction could be the result of insufficient knowledge about the digitization technology. With very few institutions initiating digital library project, it is understandable that percentage of professionals involved is less and hence the limited knowledge and the contradicting result.

The information technology competencies are further extended in table 5 below which shows the internet related competencies required from LIS professionals in the Indian Job Market. On the current internet competencies, respondent are made to rank the list of options and the result is plotted in Table 5.

Table 5: Competencies in Internet Related Competencies

Answer Options	A	B	C	D	E	F	Total Response
Electronic database searching (e.g. Using complex Boolean searches in EBSCO databases)	77	17	2	0	0	0	96
Online metadata schemas (Dublin core, EAD)	71	20	5	1	0	0	97
Webpage creation with Front Page or Dreamweaver	65	23	8	0	0	1	97
Internet protocols (HTTP, FTP, SMTP)	65	21	6	0	0	3	95
Webpage creation with hand-coded XHTML and CSS	60	24	10	1	0	2	97
Virtual reference service	59	32	5	0	1	1	97
Blogs	46	34	17	0	0	1	98

Wikis	46	30	17	2	0	1	96
Creating online informati on literacy tutorials	44	23	21	8	1	1	98
Social networking (MySpace, Facebook)	36	38	19	3	0	3	99
Evaluating websites	35	28	22	6	4	1	96
RSS	32	22	24	15	3	1	97
XML	28	45	15	2	1	1	91
Podcasting	23	23	30	14	5	1	96
Average Rating	49	27	14	4	1	1	
Total number of response							99

Ranking: A = very important, B = somewhat important, C = not very important,
D = not at all important, E = don't know, F = not applicable

On an average 49 percent ranked internet competencies as “very important” and an average 27 percent ranked it as “not very important”. Interestingly, web 2.0 technologies like RSS and Podcasting are considered “not so important”. The result is likely to change as more of web 2.0 tools are incorporated to provide library services. The use of web technologies are still few and sparse in India. As evident from Table 5, it is safe to conclude that internet related competencies are very relevant in the job markets of India.

In Table 6, users competency requirement perception on some products that can assist the library operations are plotted. The product options listed here are representational and an exhaustive list.

Table 6: Competencies in Products Assisting Library Operations

Options	A	B	C	D	E	F	Response Count
Integrated library systems	89	8	0	0	0	0	97
Institutional repository software (Dspace, Eprints)	84	12	1	0	0	0	97
Magnetic bar-coding hardware & software	77	17	1	1	1	0	96
RFID/self-check hardware and software	76	16	2	1	0	0	95
Electronic resource management (Verde, Innovative ERM)	76	15	4	1	2	0	98
Digital asset management (Digitool, ResourceSpace)	76	14	5	1	2	0	98
Interlibrary loan management	74	18	2	0	0	0	94
Federated search tools (WebFeat, MetaLib)	66	26	1	2	0	1	96
Link resolvers(SFX, Article Linker)	58	25	3	2	6	1	94
Library technology planning	52	35	6	3	0	0	96
Public access systems (PC reservation software, printing control software such as Goprint or Pharos, filtering software)	41	38	13	0	5	0	96

Request for proposal (RFP) writing for purchasing technology products	40	26	25	2	3	0	96
Average Rating	67	21	5	1	2	0	
Total number of response							99

Ranking: A = very important, B = somewhat important, C = not very important, D = not at all important, E = don't know, F = not applicable

Competencies in library operations and automation products are accorded an average of 67 percent of “very important” and 21 percent of “somewhat important”. Integrated library systems and institutional repository software are ranked very highly required. Though products like RFP are ranked lowest, only 25 percent felt that it is “not very important”. The data, once again, reflects the immediate operational requirements of LIS professionals.

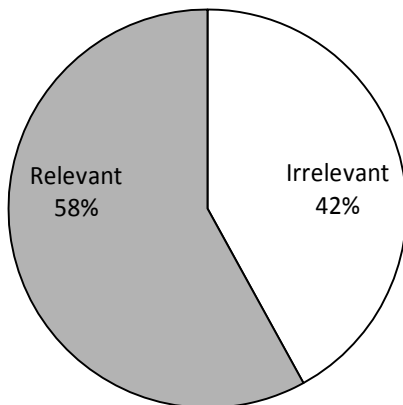
Comparative analysis of required competencies and course structure

As mentioned in the methodology, the result of the content analysis of 45 LIS curricula processed and the result is compared with the competency requirements of the job market in India. The subsequent results of the comparative analyses are discussed.

Relevance of course structure in the job market

The analysis reveals the relevance of 45 LIS course structures accrued 58 percent relevance in the current job requirements. The 45 percent gap is too huge to be brushed aside and go on with the present course structure without restructuring. Further comparative analysis of course structures and the competency requirements of the current job market are presented in the ensuing discussion.

Fig. 1: Relevance of Courses in the Job Market



Comparative analysis of job requirements and LIS courses

A content analysis is done on the competencies required in the job market and course titles. From these analysis a series of subject areas are derived. The derived areas will henceforth be referred as concepts. A web based questionnaire is prepared from these derived concepts and the respondents are made to choose which of the concepts are applicable to their current job requirements. In the same questionnaire, respondents were also asked to choose the concepts taught to them when they were doing their training/education in various library and information science departments. The process safely removes the difficulties in collecting all the course contents relevant to each respondent. The result of this process is a comparison of present job requirements and the training given the respondents. The subject concepts are presented in Table 7 comparatively with competency requirements and existing LIS courses. The comparison is based on the total number of times respondents choose that the concepts are applicable in their respective job requirements and the total numbers of times the respondents choose that the concepts are taught in their respective LIS courses.

Table 7: Comparison of Job Requirements and LIS Courses

Concepts	A	B	C	D
Online metadata schemes	89	23	26	74
Multimedia application and Institutional repositories	88	4	5	95
Advanced library software	88	40	45	55
Integrated library automation skills	88	40	45	55
Internet resources and electronic publishing	85	37	44	56
RFID (hardware and software)	84	0	0	100
Fundamentals of computer	84	45	54	46
Federated search tools (Web feat, metalib)	83	0	0	100
Link resolvers	83	0	0	100
Magnetic bar coding (hardware and software)	81	0	0	100
Electronic database searching	81	11	14	86
Internet protocols	81	37	46	54
E resources, Markup language and Dublin core	80	33	41	59
Digital libraries (Digital systems, process, digital library projects in details)	79	41	52	48
Basic PC troubleshooting (including printer)	76	0	0	100
Web knowledge, Content development	76	2	3	97
Webpage creation (with FrontPage/Dreamweaver or with hand coded XHTML)	76	11	14	86
Interlibrary loan management	74	11	15	85
Computer hardware peripherals (E-book readers, Projectors, Digital cameras, USB drives)	70	0	0	100

Concepts	A	B	C	D
Virtual reference service (using instant messaging)	65	0	0	100
Database construction and maintenance	64	25	39	61
Advanced PC troubleshooting and maintenance	61	0	0	100
Office Productivity software	53	0	0	100
Programming languages (in detail)	51	0	0	100
Wired and or wireless networking configuration and troubleshooting	45	0	0	100
Wikis, Blogs, Thin clients, Podcasting	42	0	0	100
Communication and inter personnel skills	21	5	24	76
Office communication	12	0	0	100
Technical writing skills	12	6	50	50
Smart card, RSS	10	3	30	70

A = No. of respondents for whom the concepts are currently required in their respective jobs;

B = No. of respondents to whom the concepts are taught in their respective LIS courses;

C = Percent of job requirements covered by respondent's respective LIS courses;

D = Percent of job requirement not covered in LIS Courses

As demonstrated in Table 7 many of the concepts are not at all covered in the respondents LIS course at the time of undergoing their respective training. This raise a pertinent question on how the professionals get themselves trained on the concepts required for the job. The professionals are bound to face difficulties in performing the job for which they have not received any training. With the exception of digital libraries concepts, more than 50 percent of the respondents felt that their LIS course did not match their job requirement. There is an urgent need for persistent market survey for the LIS department to incorporate the requirements of the job market. Without such exercise the gap between the job market requirement and the LIS course will sure widen more in due course of time.

Bridging the gap between LIS course and job requirements

To bridge the gap between the existing curricula and the demands of competencies in the job market the identified required concepts and courses should be incorporated in the course structure. Such exercise of job market survey should be mandatory and an ongoing process for all LIS departments at all times. From the general feedbacks received from the respondents the required concepts mentioned in the analysis should be taught with a more practical oriented approach giving stress on work assignments and learning with hands on experiences to develop skills. An important area that stands out from all the concepts is ICT application in libraries which has been highly recommended by LIS professionals working in different types of library setups. This area is highly dynamic

and calls for periodic update which can be handled by introducing the job professional developments. The skills required from the LIS professionals appear enormously broad which may be impossible to cover within two years time. There is need to branch out LIS courses to different specializations.

Conclusion

The findings show that the results are not uniform in case of the differences that exist between the courses and requirements. This may be due to the variations in requirements in different organizational set ups. When it comes to corporate environment, more of techno savvy skills as observed are expected whereas in academic environment the same is not true. "The challenge for the LIS schools is to revamp their facilities and course curricula to transform into institutions that educate and train professionals who are competent enough to create a stir in the market, a demand for their skills, societal hunt for their talents, and who can substantially contribute to management of knowledge resources, dissemination of information and create a often sought after brand name for their service and niche for themselves" **Malhan (2009)**. The type of LIS professional education we are going to provide will largely determine the professional opportunities and our professional status. A profession cannot be above the collective professional contribution, and its importance depends upon its relevance and usefulness to society. To continue to stay in service, the profession must transform the professional education to conform it to the emerging professional trends and expected developments so that LIS education programs continue to remain competitive and relevant to the needs of workplaces, and demands of market place. Comparatively the LIS schools in India are not enjoying the professional status on a par with other subjects like computer engineering or business administration. The traditional course titles in librarianship should be made to accommodate new digital formats and the online environment.

The existing teaching-learning practices and the curriculum contents should invariably be changed to suit the special needs of the sector, which is different from the conventional systems. Only then the employment market will get the desired and competent candidates to run different organizations. While change is always frightening to some, it is also inevitable. A standard curriculum covering every aspect should come up in the national level as soon as possible which can stand as a model to compete the job market. The analysis and the usefulness of different course titles discussed above can act as a guide to incorporate different concepts and frame the LIS curriculum as the need of the hour. The University Grant Commission's Curriculum Development Committee

should come forward to restructure the LIS curriculum immediately to help the new LIS professionals to survive in the competitive market.

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