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Library Philosophy and Practice (e-journal)   Libraries at University of Nebraska-Lincoln

Winter 1-19-2019

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ABSTARCT

The purpose of the study is to investigate the ICT skills of LIS professionals working in the college libraries affiliated to the University of Delhi and bring inferences for the betterment of the library. In the present study, the data was collected from the respondents through a structured questionnaire using survey method. The questionnaires were distributed among 60 LIS professionals of various college libraries affiliated to the University of Delhi through online and personal meetings, eliciting a response of 100 per cent. A five-point Likert scale was used to measure the ICT skills of the respondents. Findings of the study reveal that the majority of the LIS professionals have basic knowledge of ICT skills to manage the libraries with the exception in some areas such as dealing with the operating system and software. The study has provided an insight to meet the changing needs of users by learning ICT skills/competencies in the digital era. In totality, the results provide emphasis on the necessity of ICT skill for efficient delivery of library services for the betterment of the library as a whole. This present study will help the authorities of the University of Delhi to include courses in ICT skills in the academic/professional curriculum which would help the working LIS professionals to become competent in various skills. The present study also provided a platform to LIS professionals to find the area of focus to learn and update their ICT skills in digital environment by LIS professionals for efficient delivery of library services for the betterment of the library as a whole.

KEYWORDS

ICT, LIS Professionals, Skills and Competencies, College Libraries, University of Delhi, India.

1. **INTRODUCTION**

Library has always played a crucial role in the development of civilization from the time immemorial and regarded as a service-oriented organization wherein the information needs of the users are satisfied. With the introduction and implementation of Information & Communication Technology (ICT) in various library activities, the majority of the transactional and other important services are done digitally or electronically by the Library & Information Science (LIS) professionals. An academic library is regarded as the heart of a university that plays the important role of providing parallel support to its various academic needs such as teaching, learning, and research. With the advent and implementation of different ICT techniques in various walks of life, library of different types also found it useful as driving force to serves users' need, bringing efficiency in transactions (acquiring, organization, storing, retrieving, and dissemination of information), and security of its environment. The ICT has changed our philosophy of serving the user by LIS professionals, due to the advancement of ICT application libraries are providing both prints as well as electronic and ICT based information services. Nowadays, the users can access the information without wasting any time with the change in trends of delivery or access of information from traditional methods to digital methods. Due to digital transformation, LIS professionals must acquire the right skills to discharge their duties efficiently and must be trained in the application of various ICT tools like automation, Bibliographic standards, ICT based library services, web 2.0 skills, mobile information services, ILMS, Citation, IR, etc. The LIS professionals must learn and adjust themselves to a rapidly changing the environment by acquiring various ICT skills so that they can become valuable assets for the organization. Additionally, LIS professionals need to update their ICT skill on a regular basis to work effectively in the digital environment. Hence, LIS professionals have a role to play by acquiring ICT skills to discharge their duties. The present study aims at the identification of essential ICT skills in LIS professionals in particular in college libraries affiliated to the University of Delhi.

2. **REVIEW LITERATURE**

The review of literature in this area deals with ICT skills and competencies of LIS professionals from the period 2007 to 2018. There are many studies dealt with the study, few important studies are: Fourie (2004) opined that "they are part of a global world that is increasingly shaped by electronic networks and information technology. In this ICT-oriented environment, library professionals must become ICT literate in order to survive." A recent study by Cherinet (2018) has also mentioned that since "skills are essential for the success of individuals and libraries, the universities should include emerging skills in curricula to meet the needs of the 21st-century librarians and expectation of potential employer. LIS professional must update and upgrade their ICT skills to perform better in the digital environment. Heavy reliance on technology suggests

that LIS professionals must be able to adapt and learn new technologies, advanced skills, and tools such as Web 2.0, for academic success. Today information is produced and available in print and digital form, and for managing the modern technologies, the LIS professionals must be expert to use them for the maximum benefits of the users. Librarians should apply the skills acquired through professional development while discharging their professional duties. Librarians should apply the skills acquired through professional development while discharging their professional duties."

Another article by same author (Cherinet, 2018) shows that "perpetual skill, communication skill as one of the required skills unanimously in all job ads. The findings also reveal that knowledge and skills about content management and sharing tools are frequently required by employers." "The growing ICT driven information services have posed challenges to library and information professionals" (Ansari, 2013). Similar observation from another author also pointed that "ICT skills have become increasingly important in the pursuance of degree- level education will affect both how students manipulate these e-learning resources and the way they are used for learning. ICT skills deal with the application of ICT to a specific purpose. It is not just about using a software package or using operating systems, neither is it concerned with keyboarding skills and students' ability to copy type or follow instructions. Instead, ICT skills are about the ability to use their knowledge about ICT to find, develop and present information; whether it is text, image or number, or all of this integrated task" (Quadri, 2017). It is thus clear that LIS professionals must learn and adjust to a rapidly changing environment and acquire competencies and skills to become a knowledgeable asset to the library. Library professionals then teach these skills to users and other supporting staffs enable them to search, navigate and find the right knowledge from a world of information. This aim of this study is to investigate the ICT skills and competencies of LIS professionals working in College libraries affiliated to the University of Delhi and bring inferences for the betterment of the library.

Bansode and Viswe (2017) in their study indicate "that the ICT literacy level of the library professionals working in university libraries in Maharashtra is satisfactory. Majority of library professionals has acquired the basic ICT literacy skills which are required to handle day to day library operations, but still few library professionals need to enhance their literacy level in the area of open source library automation software, digital library software, and institutional repository software, etc." Another study by Kumar (2013) show that "LIS professionals serving in various engineering educational institutions of the Rayalaseema Region of Andhra Pradesh are mostly computer literate and have significant basic ICT skills to handle the library, still there is enough scope to develop their innovative ICT skills and to implement these skills in the library to provide new ICT-based library services."

Employers want LIS professionals with wide range of ICT skills and competencies in addition to their routine skills. Raju (2017) in his study discusses "IT knowledge and skills needed by academic librarians in the digital library environment. Result reveal that 70 to 75 per cent of job advertisements in the academic library sector emphasis advanced IT skills(Integrated library system, advanced computer skills , digitization process , web design and development, IR, and technical skills which are repositories, digitization, and curation of research data and other digital content etc.) which librarian should possess. Librarians require IT knowledge and skills to a significant extent in the academic library environment."

Chanetsa and Ngulube (2016) in their study "indicated that respondents possessed core skills which include presentation and Information literacy course design skills, reference and research skills, including information and search retrieval skills. Over a third of respondents believe that they needed new skills which includes web design, online cataloguing, classification, knowledge of HTML, virtual reference and online chats, knowledge of the use of mobile technologies like cell – phones and tablet in education, knowledge of the construction of subject portals in teaching, learning, research." "Staff development is a significant issue in a changing library environment as well-equipped professional librarians are key resources to developing and maintaining a high-quality library" (Ajeemsha and Madhusudhan, 2012). While Ajeemsha and Madusudhan (2014) in their Ph.D thesis "find out the effectiveness of training programmes for LIS semi-professionals and various aspects of continuous professional development (CPD) in Central University of South India. The result shows that most of the semi-professionals are a positive look on CPD activities and satisfied with the effectiveness of the training programme particularly on- the - job training. In-house training will improve their job performance and prefer to develop new services from what they had learned". Maceli and Burke (2016) in their study "indicates that respondents use email, word processing, web browser, the library catalog, and library database searching were the technology/skills that they regularly used in their job."

Various studies have mentioned the necessity of ICT skills for librarians. Hallam and Ellard (2015) study show that "digital literacy represents a fundamental Foundation skill needed by library staff". Baro and Eze (2015) investigated "the level of ICT, information literacy (IL) skills of librarians in Nigerian Colleges of Education (COE) in order to discover the challenges they face in acquiring these skills. The findings showed that librarians in the study zone rate their Information Literacy skills as average." Another notable study by Nkamneben, et al. (2015) examined the "extent of ICT skills possessed by librarians in the universities in Anambra State, Nigeria. The findings reveal that Librarians in the universities in Anambra State are weakly skilled in ICTs."

Another study by Okafor (2015) examined the "relevance and adequacy of IT skills set in some Nigerian University in a digital environment. The result revealed that many of the respondents do have knowledge and skills of email use and word process task but lack knowledge of search

engines and directories other than Google and Yahoo, respectively." Vijay kumar and Sweety (2015) in their study report that "professionals have above average skills for ICT based information retrieval (accessing, searching and use of e-journals). The respondents also have an average level of skill in electronic document delivery and Inter library loan through a network, online Indexing and abstracting services Digital Reference services, Development of Institutional repository, SDI services, and electronic new additional alert."

Raju (2014) in his study emphasizes that "librarian must possess knowledge of digitization, metadata creation, and management, preservation of digital information and computer skills, which are necessary to work in online information environments". Seena and Pillai (2014) assessed the "level of ICT skill among library professionals in Kerala University Library system. The analysis revealed that the library professionals in Kerala University library have relatively average level skill in various ICT related tasks in libraries. All the professionals expressed a positive attitude toward the application of ICT in libraries." Selvantony, et al., (2014) examined the "various skills of library professionals in Engineering Colleges to determine the level of skills like low, high and moderate among library professionals in Tamilnadu. The findings show that in all the categories of Library staff, found more in the moderate skills and found less in the high skills among Librarian, Assistant Librarian, and Library Assistant." Sahu (2013) through survey has found that less number of respondents are having proficiency in Technical and interpersonal skill, networking, XML language, and project management skill, which mostly needed for the librarian in this current environment."

Kattimani and Naik (2013) in their study found that "librarians had more skills on web design than an operation of computers, the creation of files and folders, radio frequency identification, library automation software modules, various operating systems, internet-related skills, and search engines.." Grgic and Zivkovic (2012) conducted a survey to "identify the skills and competencies needed in a reference librarian in Croatian academic libraries. The result indicates that in under general skills searching skills (82.9 per cent), followed by IT skills (34.1 per cent) and Traditional reference interview (14.6 per cent) were the most important general competencies and skills considered by the librarian. Less important technology skills are web design, software and hardware troubleshooting, chat and instant messaging (5 per cent or less)." Ajeemsha and Madhusudhan (2012) examined "skills and competencies required for the ICT professionals and various aspects of competencies. They mentioned several skills and competencies required for the ICT professionals such as Automation skills, Digital library competencies, core and technological, Web 2.0 competencies, computer hardware competencies, institutional repository competencies, library management software skills, web page creations, RFID, e-journal , e-book, e-resources, knowledge management competencies virtual reference , online metadata schema, database creation, internet competencies."

Tzoc and Millard (2011) analyzed the "preferred and required qualifications in 43 job listings for digital librarian positions posted from January to December 2010 on various LIS job posting sites. The authors found that LIS curriculum lagged in programming skills that employers perceived as core competencies including scripting languages, digital content management systems, metadata and cataloging standards, and XML skills. The result also found that web development skills are in very high demand." Farahi and Gandhi (2011) while comparing the "ICT skills of Medical library professionals of India and Iran report that ICT skills requirement of Iranian professionals is higher than their Indian counterpart, therefore, their skills are higher." Nonthacumjane (2011) discusses "what skills and competencies are required for LIS professionals in the digital era through the content analysis of literature in this area. The author found that library professionals in the digital era were required to be analytical, creative and flexible, have general skills such as communication and teamwork and critical thinking and more technical skills such as knowledge of collection development, digital library software, and metadata."

Thanuskodi (2011) conducted a study "to measure ICT Literacy among Library professionals in engineering college libraries of Tamil Nadu. The study found that a majority was skillful in computer fundamental and internet searching skills. Most of the respondents want training in library management software. Respondents had knowledge of different library software for library automation and different digital library software for developing digital libraries and they were also familiar with online searching tools." Satpathy and Maharana (2011) assessed the "ICT skills of LIS professionals in Engineering Institutions of Orissa, India using digital technological tools in libraries. Their findings revealed that majority of LIS Professionals are computer literate and have sound knowledge of available ICT tools in Libraries." Batool and Ameen (2010) "studied the status of technological competencies of librarians at Punjab University. Their findings revealed that all librarians had word processing skills but not very skillful in computer hardware expertise. Study further revealed that they knew how to use basic Internet functions but not advanced services, although they had expertise in using web Dewey, OPAC, and MARC records. The researchers pointed out that lack of coverage in the curriculum, lack of refresher courses, and lack of training workshops were major problems in learning of technology."

Safahieh and Asemi (2010) "observed that majority of librarians at Ispahan University, Iran did not have good computer skills. Though librarians had long experience, none of the librarians perceived their level of skills as very good." Ademodi and Adepoju (2009) explored "computer skill and competence among librarians in Ondo and Ekiti States and the level of ICT implementation in libraries in the two states. Findings revealed that few librarians use computers to carry out library functions, which may suggest that their computer skill is impeded. The study also disclosed that only one-third of the respondents have received formal computer training". The authors commented: "most of the librarians are computer literate but the rate of computer skill and competence is low." Choi and Rasmussen (2009) "through content analysis of job

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advertisements in the United States of America (USA), found that key disciplinary knowledge required for this digitally oriented environment included understanding metadata and knowledge and experience in digital content creation and management." Mathews and Pardue (2009) "examined the IT skills employers deemed essential for librarians to include Web development, project management, systems development, and systems applications. The authors found that librarians need to possess both library skills to manage electronic and digital information and the technical skills to maintain the IT systems that support them." Kavulya (2007) also mentioned "a variety of ICT skills such as webpage construction, database design, internet use, and evaluation and information use and retrieval."

The fast paced developments in the field of information and communication technologies have made the LIS profession and library services more dynamic. Today, libraries are changing their modes of information delivery at a very fast rate. The literature review showed that there are few attempts to study the various types of ICT skills and competencies acquired or required by the LIS professionals working in college libraries under study.

3. OBJECTIVE OF THE STUDY

   (i)   to know the different methods of computer skills acquired by the LIS Professionals in college libraries under study;
   (ii) to find out the ICT skills required to perform the Library and Information Services in ICT environment by the LIS Professionals;
   (iii) to examine the ICT skills among LIS Professionals to handle library and information services in collaborative age;
   (iv) to identify the use of various ICT tools by LIS professionals for providing various services in the college libraries;
   (v)   to know the LIS Professionals participation in Continuing Professional Development programmes (CPD); and
   (vi) to suggest new generation ICT skills to strengthen the college libraries under study.

4. SCOPE OF THE STUDY

The present study is confined to College Librarians, Professional Assistants (PA), and Semi-Professional Assistants (SPA) (hereafter called LIS Professionals) who are working in 20 college libraries affiliated to University of Delhi.

5. RESEARCH METHODOLOGY

A structured questionnaire was designed and circulated among 60 LIS professionals of studied college libraries in University of Delhi. All the 60 filled in questionnaires (20 Librarians, 20 Professional Assistants, and 20 Semi-Professional Assistants) were collected and response rate was 100 per cent. For the analysis and interpretation of data, all the questionnaires were selected. The response to 35 questions and 148 features were analyzed in the form of tables and figures.

6. RESULTS AND DISCUSSION

6.1 Demographic details

Gender wise Distribution of Respondents

The demographic features of respondents were sought and responses are presented in Table 1.

Table 1: Gender wise distribution (N= 60)

Sl. No.	Gender	No of Respondents	Per centage %
01	Male	37	61.7
02	Female	23	38.3

It is clear from the table 1, out of total respondents 61.7 per cent were males, and remaining were females (38.3 per cent).

Mode of Appointment

"Mode of appointment is a significant factor in determining whether the professional status will affect the participation rate in professional development activities. The mode of appointment in this study is divided into five groups, viz. permanent, on deputation, Ad-hoc, contract, and trainee" (Ajeemsha and Madhusudhan, 2014).
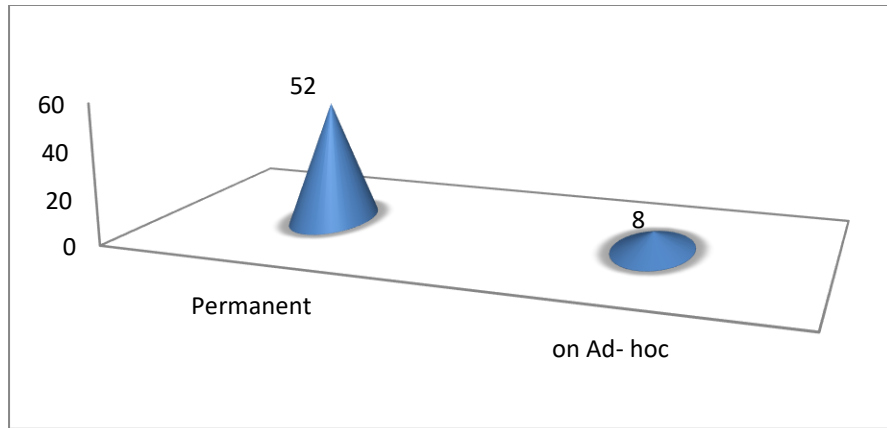
Figure 1: Mode of Appointment (N= 60)

Figure 1 reveals that 52 out of 60 (87 per cent) of respondents are permanent employees, followed by Ad-hoc 8 out of 60 (13 Per cent).

Total Working Experience

The professional working experience of the respondent was asked in the questionnaire. From the response received, it is apparent that the total working experience of LIS professionals ranges from less than ten years to more than twenty five years. In order to tabulate all the related data, the total working years have been represented into four groups; working experiences from less than 10 years, 10- 15 years, 16- 25 years and above 25 years.

Table 2: Total Working Experience

Sl. No	Working Experience (Years)	No of Respondents	%
01	<_10	21	35
02	10 – 15	08	13
03	16 – 25	15	25
04	>_ 25	16	27

Table 2 presents that 35 per cent LIS professionals have an experience of less than 10 years It is followed by 27 per cent respondents who have more than 25 years of experience. There are 25 per cent respondents who fall in the category of 16 years to 25 years of experience and 13 per cent respondents have the experience of 10- 15 years.

Qualifying Exam passed by the LIS Professionals

Qualifying exam passed by the LIS professionals in figure has been graphically displayed in figure 2.
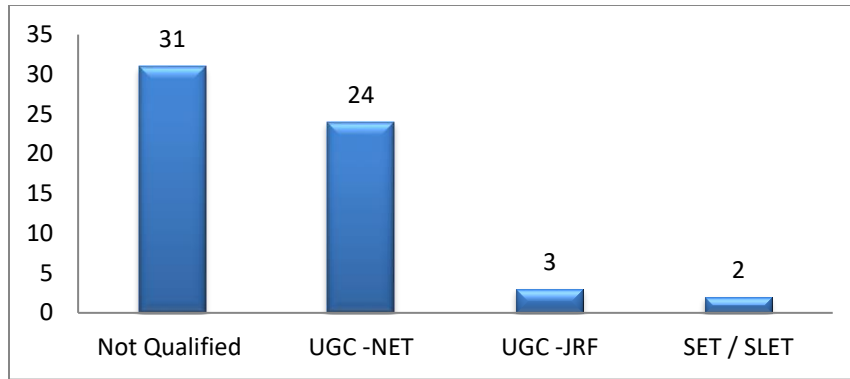
Figure 2: Qualifying Exams Passed by the LIS Professionals

Figure 2 shows that 52 per cent of the respondents were unable to clear any sort of qualifying exam. Only 40 per cent of respondents had cleared University Grants Commission (UGC) – National Eligibility Test (NET) exam, 5 per cent had cleared UGC – Junior Research Fellow (JRF) exam and 3 per cent had cleared only SET / SLET exam. So in total, 48 per cent of LIS professionals were able to clear qualifying exams.

Academic Qualification: Before joining the library

Respondents were enquired about their Academic qualification before joining the library. It is clearly shown in Figure 3, approximately 32 per cent of the respondents did not respond to the related query. Twenty-eight per cent of LIS professionals hold the Graduation and Post-Graduation degree each, while 10 per cent and 2 per cent passed the senior secondary and Secondary before joining the library, respectively.
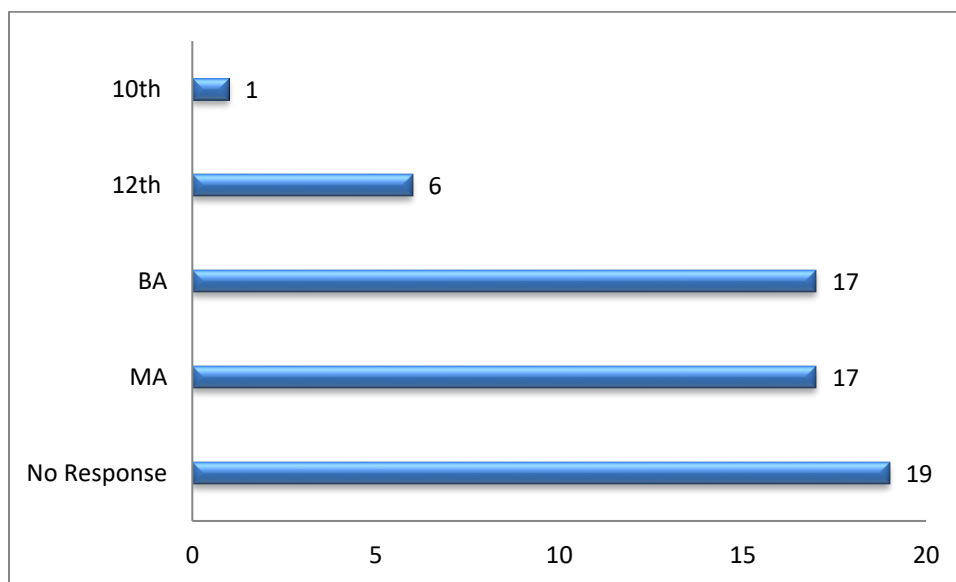
Figure 3: Academic Qualification before joining the library

Academic Qualification of LIS Professionals after joining the library

Figure 4 depicts that only 13 per cent LIS respondents have added an academic degree in their profession, whereas, 88 per cent did not acquire any academic qualification in their career after joining the library.
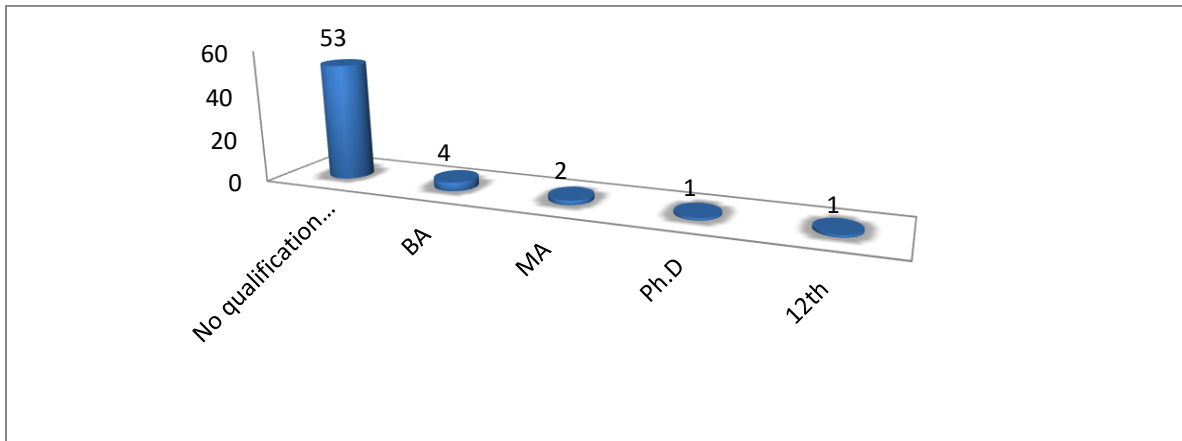
Figure 4: Academic qualification of LIS professionals after joining the library

Professional qualification of LIS professionals before joining the library

The related data of the professional qualification are given in Figure 5. It is clear, the majority of the LIS professionals (46 per cent) in the colleges had Master in Library and Information Science (M.L.I.Sc. programme, while (15 per cent) had B.L.I.Sc degree. The higher qualification degrees of Ph. D. and M. Phil. in Library and Information Science were acquired by 5 percent and 12 percent of LIS professionals, respectively. Remaining 10 per cent of LIS professionals have done C.L.I.Sc course, whereas 12 per cent of LIS professionals did not respond to the query. The reason may be they do not want to disclose for personal reason.
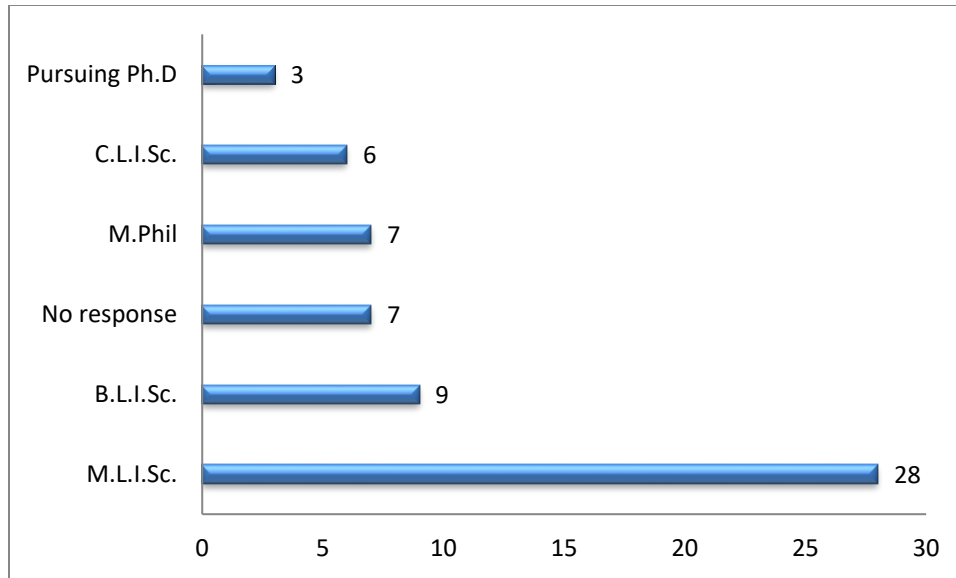
Figure 5: Professional qualification of LIS professionals before joining the library

Professional qualification after joining the library

The related data of LIS professionals who acquired professional qualifications are given in Figure 6. It is visible from the figure, the majority of (21.7 per cent) of the LIS professionals have done M.L.I.Sc., after joining the library, while 15 per cent have done B.L.I.Sc., followed by LIS professionals who have done a Certificate course in Library Science (3.3 per cent). Further, 6.7 per cent were found to have M. Phil. whereas highest qualification of Ph.D. was gained by only 15 per cent. Interestingly, 38.3 per cent LIS professionals have not attained any qualification in-service duration. It is inferred from the data that the studied libraries are blessed with well-qualified staff.
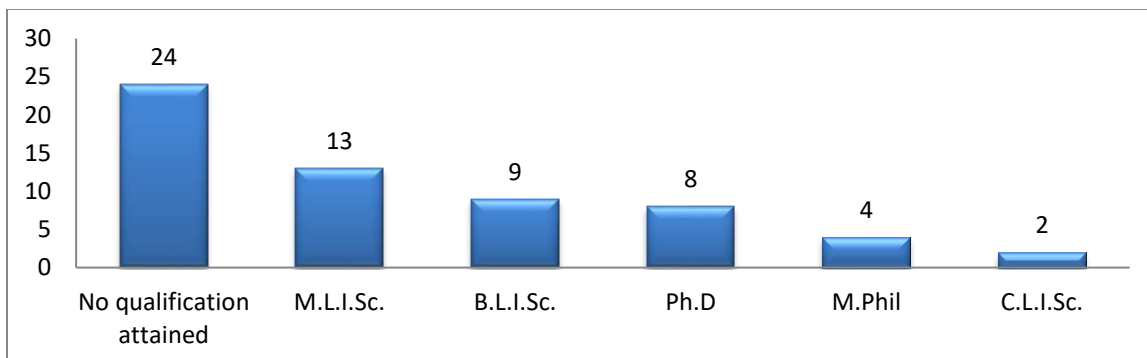
Figure 6: Professional qualification after joining the library

ICT qualification before and after joining the library

The related data of the ICT qualifications are given in Figure 7, which clearly shows that before joining the library, 6.7 per cent of the respondents have done Diploma in Computer Application, while (3.3 per cent) have done Post Graduation Diploma in Computer Application (PGDCA)/ Post-Graduate Diploma in Automation and Networking (PGDLAN), whereas 54 per cent of LIS professionals have not done any course in ICT. After joining the library, figure 7 reveals that only (3.3 per cent) have done PGDCA/PGDLAN, while meager percentage (1.7 per cent) of LIS professional have done Diploma in Computer Application. It is inferred that LIS professionals are not doing ICT courses through to update their ICT skills and there is an urgent need to do the ICT above courses to upgrade their skills
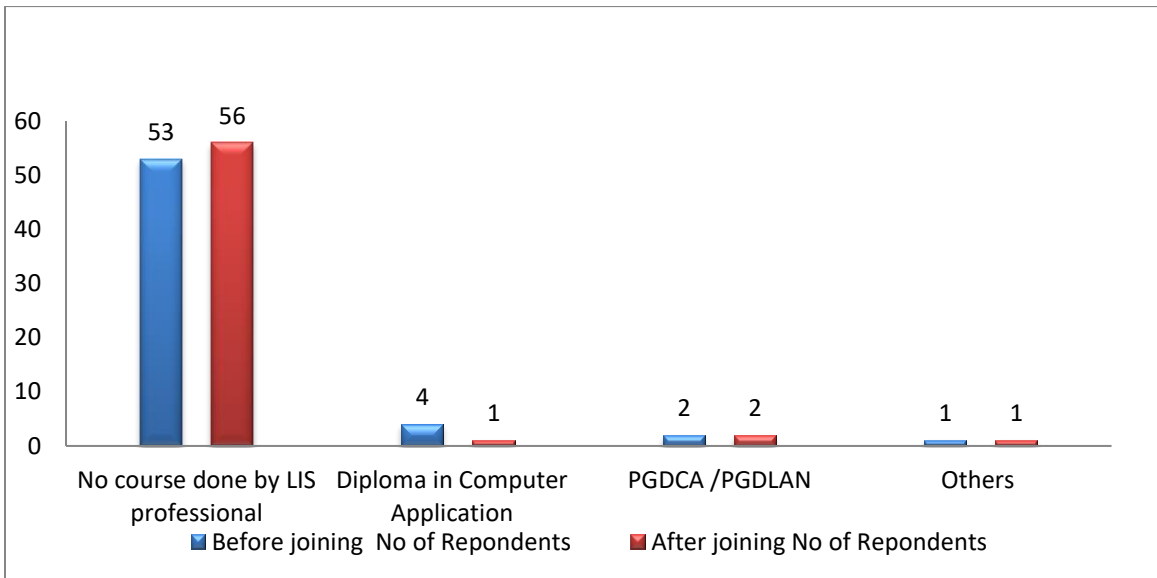
Figure 7: ICT qualification before and after joining the library

6.2 Competencies & skills of LIS professionals in digital age

Methods of acquiring ICT skills

Since technology is changing fast and unexpectedly, it is imperative for LIS professionals to acquire skills, knowledge, competencies in ICT to perform effectively. There are different ways from which one can learn and acquire ICT skills. A question with multiple choices was asked to the respondents, and the related results are given in Table 3. It is evident that majority of LIS professional (70 per cent) have chosen workshop/seminars/conferences as the most preferred method of acquiring ICT skills, while 68.3 per cent of each respondent acquired ICT skills through colleagues/friends and self-study/trial and error.

Table 3: Methods of acquiring ICT skills

S.No.	Particulars	No of Respondents
01	Workshop or seminar/conferences	42 (70%)
02	Colleagues/friends	41 (68.3%)
03	Self-study/trial and error	41(68.3%)
04	Training by software suppliers	38 (63.3%)
05	Formal education (degree/diploma)	37 (61.7%)
06	On the job Training	32 (53.3%)
07	Web-based tutorial (YouTube, webinar)	29 (48.3%)
08	Orientation courses / Short Term Courses	26 (43.3%)
09	Refresher course	19 (31.7%)

Note: Percentage exceeds 100 per cent because respondents were allowed multiple answers

The 63.3 per cent received training by software suppliers, while 61.7 per cent received the formal education, followed by on the job training by 53.3 per cent respondents. The dependency on Refresher course has been ranked least (31.7 per cent). It is clear from the table that Workshop or seminar/conferences got an edge over others. In a similar study by Saka et al (2016) find out "the methods by which librarians acquired skills and types of skills attained for personal development and career advancement. Results showed the popular methods by which librarians acquire skills, through conferences, on-going postgraduate programme, workshops, and seminars were also considered as the appropriate methods used to acquire skills by the respondents. On-the-job training was not considered as an appropriate method in the acquisition of skills while respondents seem not to use participatory management in the acquisition of skills." The findings are comparable with the work of Baro and Eze (2015), who, "investigated the information literacy skills of Librarians in Nigerian College of Education (COE); the result of their research showed that majority of librarians acquired their skills through self-practice, friends and colleagues, workshop, conferences and seminars and through on the job training". Similarly, a study by Safahief and Asemi (2008), "showed that the majority of librarians acquired their computer skills through informal channels." It is clear from the findings that LIS professional with these methods can acquire the ICT skills to cope with the challenges posed by ICT.

LIS Skills in collaborative age

Due to the advancement of ICT library and information services have changed. Through automation, libraries are providing quality services to users. This is the highest part of questionnaire having 40 questions and responses presented in Table 4.

Table 4: LIS Skills in Collaborative Age

S. No.	Particulars	No. of Respondents				
		Excellent	Good	Fair	Poor	Unknown
Library Automation						
01	Acquisition	30(50.0)	28 (46.7)	02(3.3)	00(0.0)	00(0.0)
02	Serial control	21(35.0)	28(46.7)	06(10.0)	02(3.3)	03(5.0)
03	Circulation	30 (50.0)	26(43.4)	02(3.3)	00(0.0)	02(3.3)
04	Cataloguing	28(46.7)	27(45.0)	03(5.0)	00(0.0)	02(3.3)
05	OPAC	34(56.7)	21(35.0)	02(3.3)	00(0.0)	03(5.0)
ICT Based Library Services						
06	Automated CAS	16(26.7)	19(31.7)	13 (21.7)	02 (3.3)	10(16.6)
07	Automated SDI	14 (23.3)	20 (33.3)	14 (23.3)	04 (6.7)	08(13.4)
08	Electronic clipping Service	11 (18.3)	20 (33.3)	10 (16.7)	02 (3.3)	17(28.4)
09	Document Delivery Services	16 (26.7)	23 (38.3)	06 (10.0)	03 (5.0)	12(20.0)
10	E mail Alert Services	25 (41.6)	18 (30.0)	07 (11.7)	01 (1.7)	09 (15.0)
11	e - Reference Services	16 (26.7)	21 (35.0)	14 (23.3)	01 (1.7)	08(13.3)
12	Web based Information Literacy	11 (18.3)	17 (28.3)	09 (15.0)	04 (6.7)	19(31.7)
Hardware						
13	Desktop	22(36.6)	31(51.7)	05 (8.3)	01(1.7)	01(1.7)
14	Tablet PCs	11(18.3)	25(41.7)	06 10.0)	02(3.3)	16(26.7)
15	Personal Digital Assistant	07(11.7)	20(33.3)	07(11.7)	01(1.7)	25(41.6)
16	External Removable Hard Drive	15(25.0)	25(41.7)	05 (8.3)	03(5.0)	12(20.0)
17	Pen Drive	21(35.0)	28(46.7)	03 (5.0)	00(0.0)	08(13.3)
Operating System						
18	Windows 10	18(30.0)	30(50.0)	02 (3.3)	02(3.3)	08(13.4)
19	Linux	04 (6.7)	11(18.3)	15(25.0)	03(5.0)	27(45.0)
20	UNIX	03 (5.0)	09(15.0)	18(30.0)	04(6.7)	26(43.3)
21	Mac OS	04 (6.7)	07(11.7)	12(20.0)	06(10.0)	31(51.6)
Application Software						
22	MS Word	33(55.0)	26(43.3)	01(1.7)	00(0.0)	00(0.0)
23	MS Excel	31(51.6)	27(45.0)	01 (1.7)	00(0.0)	01(1.7)
24	MS Power Point	28(46.6)	25(41.7)	04 (6.7)	01(1.7)	02(3.3)
25	MS Access	18(30.0)	13(21.6)	10(16.7)	04(6.7)	15(25.0)
26	Acrobat Professional	13(21.7)	14(23.3)	05 (8.3)	09(15.0)	19(31.7)
Bibliographic and Metadata Standards						
27	MARC 21	20(33.3)	23(38.3)	10(16.7)	01(1.7)	06(10.0)
28	CCF	06(10.0)	22(36.7)	12(20.0)	02(3.3)	18(30.0)
29	Z39.50	06(10.0)	21(35.0)	11(18.3)	05(8.3)	17(28.4)
30	Dublin Core	04(6.6)	16(26.7)	13(21.7)	04(6.7)	23(38.3)
Networking						
31	LAN (Intranet)	28(46.7)	25(41.7)	04 (6.7)	01(1.6)	02(3.3)

32	WAN (Intranet)	18(30.0)	23(38.3)	07(11.7)	02(3.3)	10(16.7)
33	MAN	07(11.7)	17(28.3)	14(23.3)	03(5.0)	19(31.7)
34	Bluetooth	13(21.7)	27(45.0)	07(11.7)	03(5.0)	10(16.6)
35	Wi-fi	26(43.3)	21(35.0)	03(5.0)	02(3.3)	08(13.4)
Cloud Computing						
36	Cloud drive	09(15.0)	20(33.3)	12(20.0)	05(8.3)	14(23.4)
37	Cloud Computing tools	07(11.7)	16(26.7)	10(16.6)	09(15.0)	18(30.0)
Artificial Intelligence						
38	Robotics	03(5.0)	07(11.7)	12(20.0)	08(13.3)	30(50.0)
39	Expert System	02(3.3)	11(18.3)	08(13.3)	08(13.3)	31(51.8)
40	Natural Language Processing	03(5.0)	08(13.3)	12(20.0)	06(10.0)	31(51.7)

Note: *Percentage is shown in parenthesis.*

Through automation, libraries are providing quality services to users. ILMS consists of modules to perform various functions of library activities. ILMS is designed to enhance all library routine activities expected by the user. As shown in Table 4, that LIS professionals automation skills are remarkable. 56.7 per cent, 50 per cent, 50 per cent, and 46.7 per cent LIS professionals have rated their skill as excellent in Online Public Access Catalogue (OPAC), acquisition, circulation, and cataloguing respectively. Whereas, 46.7 Per cent of LIS professional rated serial control as good. It can be inferred that LIS professionals have good automation skills and competent to do automation work. ICT has brought the changes in ICT based library services. Now libraries are providing electronic-based services to the users. Table 4 represent that LIS professionals are competent enough in providing Email – Alert service with 41.6 per cent in excellent rating. 38.3 per cent of LIS professionals rated that they are good at Document delivery service followed by e- reference service (35 per cent), Automated SDI (33.3 per cent), Automated CAS (31.7 per cent). LIS professionals need to acquire skills in Web-based Information services as it is rated unknown with 31.7 per cent.

"Computer hardware is the collection of physical elements that constitute a computer system" (study.com, 2018). Table 4 depicts that LIS professional are having good skills in Desktop with 51.7 per cent followed by Pen Drive with 46.7 per cent, Tablet PCs with 41.7 per cent, External Removable Hard Drive with 41.7 per cent. 41.6 per cent LIS professionals states that PDA is unknown to them. Therefore, LIS professionals need skill learning in PDA. "An operating system (OS), in its most general sense, is software that allows a user to run other applications on a computing device. While it is possible for a software application to interface directly with hardware, the vast majority of applications are written for an OS, which allows them to take advantage of common libraries and not worry about specific hardware details" (Techopedia, 2018). Table 4 indicates that most of the LIS professionals are well acquainted with Windows 10 operating system only with 50 per cent rating as good, whereas in the unknown category, Mac OS tops the list with 51.6 per cent followed by Linux with 45 per cent and UNIX with 43.3 per cent. It is clear from the table that LIS professionals need to learn more about OS such as

LINUX, UNIX, Mac OS. Some respondents also mentioned that they are well acquainted with Windows 7 also.

"Application software applies the power of a particular computing platform or system software to a particular purpose" (Mookcacademy, 2018). The data from table 4 suggests that LIS professionals have excellent skills and are competent in using various application software as they have rated MS word (55 per cent), followed by MS Excel (51.6 per cent), MS PowerPoint (46.6 per cent) and MS Access (30 per cent) in the excellent category. It is observed that LIS professionals' skill and knowledge about Acrobat Professional is very low, as it is rated as unknown by 31.7 per cent. Thus, it is advised to LIS professionals to acquire this skill.

For the use in a bibliography or library catalogue, the bibliographic standard created a bibliographic description in rules or human – readable form. As shown in Table 4, in case of acquainted Bibliographic Standards in all criteria mentioned above, 38.3 per cent of LIS respondents rated MARC 21 as good followed by CCF (36.7 per cent), and Z39.50 (35 per cent).The Bibliographic Standards are mostly assessing in the good category. Dublin Core is not known to the LIS professionals with 38.3 per cent.

"Networking refers to the total process of creating and using computer networks, with respect to hardware, protocols, and software, including wired and wireless technology"(Techopedia, 2018). Table 4 exhibits that LAN tops in the excellent category with 46.7 per cent followed by Wi-Fi with 43.3 per cent. However, Bluetooth top the list in good ratings with 45 per cent followed by WAN with 38.3 per cent. 31.7 per cent of respondents rated MAN as unknown to them. "Cloud computing is a synonym for distributed computing over a network and means the ability to a forum a program on many connected computers at the same time" (Dragon, 2018) . Table 4 Show that LIS professional rated cloud drive as good ratings with 33.3 per cent. 30 per cent LIS professional do not posses competency in cloud computing tools as they have rated it unknown. LIS professional needs to learn this skill in today's digital environment.

 In the contemporary world, "Artificial Intelligence (AI) is a technology and a branch of computer science that studies and develops intelligent machines and software"(Techopedia, 2018). Table 4 reveals that LIS professional knowledge about AI skills is very low. Most of LIS professionals do not have knowledge and skills in Expert System, Natural Language processing Robotics as respondents rated them as unknown. AI is emerging area in which most of the LIS professionals do not possess AI Skills. There is increasing need of the hour is to acquire AI skills at the earliest because now-a-days many LIS system are powered by AI technology. In future, AI skills play a vital role in library service therefore LIS professionals should be made technologically competent in order to create and augment AI systems.

ICT Tools

In order to provide fast and appropriate services to the users, integrated library management software makes library activities and functions easy for faster delivery to the users. This is second highest part of questionnaire consists of 36 questions and tabulated in Table 5.

Table 5: ICT tools

S. No.	Particulars	No. of Respondents				
		Excellent	Good	Fair	Poor	Unknown
ILMS Tools						
01	Koha	13(21.7)	22(36.7)	07(11.7)	07(11.7)	11(18.2)
02	Libsys	20(33.3)	27(45.0)	05(8.4)	02(3.3)	06(10.0)
03	VTLS	02(3.3)	11(18.3)	12(20.0)	03(5.0)	32(53.4)
04	Netlib	08(13.3)	16(26.7)	12(20.0)	05(8.3)	19(31.7)
05	NewGenlib	04(6.7)	11(18.3)	09(15.0)	06(10.0)	30(50.0)
06	Troodon	10(16.7)	13(21.7)	12(20.0)	06(10.0)	19(31.6)
07	SOUL 2.0	09(15.0)	13(21.7)	12(20.0)	05(8.3)	21(35.0)
Institutional Repository Tools						
08	DSpace	06(10.0)	20(33.3)	09(15.0)	06(10.0)	19(31.7)
09	Green Stone	04(6.7)	19(31.7)	08(13.3)	08(13.3)	21(35.0)
10	E prints	01(1.7)	13(21.7)	12(20.0)	11(18.3)	23(38.3)
11	Ganesha	00(0.0)	09(15.0)	07(11.7)	10(16.7)	34(56.6)
12	Fedora	00(0.0)	09(15.0)	08(13.3)	10(16.7)	33(55.0)
Electronic Security and Surveillance						
13	Barcode	25(41.7)	31(51.6)	01(1.7)	01(1.7)	02(3.3)
14	RFID	17(28.3)	27(45.0)	03 (5.0)	02(3.3)	11(18.4)
15	Smart Card Technology	14(23.3)	14(23.3)	09(15.0)	02(3.3)	21(35.1)
16	Biometric Technology	14(23.3)	14(23.3)	11(18.3)	01(1.7)	20(33.4)
17	QR Code	11(18.4)	17(28.3)	14(23.3)	01(1.7)	17(28.3)
18	CCTV	24(40.0)	21(35.0)	07(11.7)	00(0.0)	08(13.3)
19	Electromagnetic security system	10(16.7)	16(26.7)	09(15.0)	03(5.0)	22(36.6)
20	Burglar system	07(11.7)	09(15.0)	09(15.0)	07(11.7)	28(46.6)
21	Access Control system	09(15.0)	06(10.0)	10(16.7)	04(6.7)	31(51.6)
Content Management System						
22	Drupal	01(1.7)	14(23.3)	10(16.7)	09(15.0)	26(43.3)
23	Joomla	02(3.3)	12(20.0)	10(16.7)	09(15.0)	27(45.0)
24	Typo 3	00(0.0)	08(13.3)	05 (8.3)	11(18.4)	36(60.0)
25	Php Nuke	00(0.0)	06(10.0)	06(10.0)	11(18.3)	37(61.7)
Citation Creation & Management Tools						
26	Refwork	04(6.7)	16(26.6)	10(16.7)	06(10.0)	24(40.0)
27	End Note	03(5.0)	17(28.3)	09(15.0)	07(11.7)	24(40.0)
28	Easy Bib	03(5.0)	18(30.0)	07(11.7)	06(10.0)	26(43.3)
29	Mendeley	05(8.3)	11(18.3)	09(15.0)	06(10.0)	29(48.4)
30	Zotero	05(8.3)	09(15.0)	09(15.0)	05(08.3)	32(53.4)
Statistical Packages						

31	SPSS	06(10.0)	18(30.0)	09(15.0)	11(18.3)	16(26.7)
32	Excel	22(36.7)	24(40.0)	05(8.3)	01(1.7)	08(13.3)
33	R Software	02(3.3)	09(15.0)	08(13.3)	07(11.7)	34(56.7)
Navigational Tools						
34	Search Engines	18(30.0)	31(51.7)	02(3.3)	02(3.3)	07(11.7)
35	Web Directory	15(25.0)	28(46.7)	01(1.7)	02(3.3)	14(23.3)
36	Subject Gateway	13(21.7)	25(41.7)	04(6.7)	02(3.3)	16(26.6)

Table 5 shows the competency and skills of LIS professional in automation software. Table 5 indicated that the majority of LIS professionals are having skills in using the LibSys Software with good ratings 45 per cent followed by Koha with 36.7 per cent. A similar study by Seena and Pillai (2014) also reveals LibSys software under good category. The LIS professionals rated their skills in other software as very low. VTLS (53.4 per cent), NewGenlib (50 per cent), SOUL 2.0(35 per cent), Netlib (31.7 per cent), and Troodon (31.6 per cent) are unknown to LIS professionals. It means that LIS professionals must be expert in using these ILMS. Since the KOHA and NewGenlib are open source software, the LIS professionals must be competent in using these software to provide effective and efficient services to the user, as these are not commercial software.

In Institutional Repository (IR), the institutions' intellectual output is collected, preserved and disseminated particularly in digital form which is accessible by all on the internet. It is also known as the digital library. Table 5 reveals that LI S professionals have good skills in Dspace with 33.3 per cent in good category. The skills in other digital library software is very low as they are rated by LIS professionals as unknown, Ganesha (56.6 per cent),Fedora(55 per cent), E-Prints(38.3 per cent), and Green Stone(35 per cent). It means they do not have knowledge and expertise on digitization software which should be acquired by the LIS professionals.

"Electronic security and surveillance systems such as RFID, CCTV, Biometric, and Burglar alarm helps in the monitoring of the behavior, activities or other changing information, usually of people for the purpose of influencing, managing, directing, or protecting them" (Gupta and Madhusudhan, 2017). It is observed in Table 5 that 51.6 per cent of LIS professionals rated Barcode as good, followed by RFID (45 per cent), and QR code (28.3 per cent). However, LIS professionals are competent in CCTV as they rated CCTV with 40 per cent in excellent category. 51.6 per cent of LIS professionals rated the Access Control system to be unknown to them, followed by Burglar System (46.6 per cent), Electromagnetic (36.6 per cent), Smart card Technology (35.1 per cent), Biometric Technology (33.4 per cent), and QR Code (28.4 per cent). Overall the LIS professionals need to acquire skills in Electronic security and surveillance.

 "CMS is very important in a digital library environment. So, the information professionals need CMS skills to manage content storing, retrieving and related procedures by applying the standard format." (Pusssadee Nonthacumjane, 2010). As shown in Table 5, it is observed that LIS

professional are not skilled in Content Management System. Hence under unknown category, PHP Nuke (61.7 per cent) followed by Typo 3 (60 per cent), Joomla (45 per cent) and Drupal with 43.3 per cent and thus marked for improvement in the skills for LIS professionals.

"Citation management tools allow a user to organize and retrieve information, such as citations, by interfacing with library database" (Cornell University Library, 2018), where many commercial, social networking and free citation management tools are existing. It is observed from Table 5 that LIS professional's skill in citation management tools is very low. It is clear that Zotero (53.4 per cent), Mendeley (48.4 per cent), Easy Bib (43.3 per cent), EndNote and Refwork (40 per cent) each are unknown to LIS professionals. Hence LIS professionals should acquire skills in Citation management tools.

"Statistics deals with the collection, organization, analysis of data and drawing of inferences from the samples to the whole population" (Winters, Ryan et al, 2010). There are various statistical tools available through which analysis of data is done to arrive at any conclusions. As clearly visible in Table 5, LIS professionals have skills and competence in Excel with 40 per cent under good category, followed by SPSS with 30 per cent. However, more than 55 per cent of professionals rated R Software in an unknown category. It is inferred that LIS professionals must learn statistical skills.

Navigation is the window between the user and the world of information. Table 5 represents that LIS professional have skills and knowledge in Navigation tools. Search Engines, Web Directory and Subject Gateways were rated under good category with 51.7 Per cent, 46.7 per cent, and 41.7 per cent respectively by the LIS professionals. Navigation skills are the need of the hour, so the knowledge about navigational tools is very crucial in retrieving information with precision.

ICT skills in collaborative age: Web 2.0 tools

Web 2.0 tools support sharing, networking and disseminating of information among friends and other professional groups. Through web 2.0 tools LIS professionals can organize their material and enhances services to serve the users better and attract potential users. There are various applications of Web 2.0 tools such as blog, wikis, instant messaging, social networking site, social bookmarking, academic networking sites, Podcasts, RSS feed, streaming Media, etc. Chanetsa and Ngulube (2016) in their study indicate that respondents need skills in the use of online chats, social media, Web 2.0 / Web 3.0 tools like wikis, Blog, Social Networking Sites in teaching, learning and Research.

Table 6: Web 2.0 Tools

S. No.	Web 2.0 Tools	No. of Respondents				
		Excellent	Good	Fair	Poor	Unknown
01	Wikis	10(16.7)	25(41.7)	09(15.0)	03(5.0)	13(21.6)
02	Blogs	14(23.3)	23(38.3)	10(16.7)	04(6.7)	09(15.0)
03	RSS feeds	12(20.0)	14(23.3)	11(18.3)	07(11.7)	16(26.7)
04	Podcasts	08(13,3)	13(21.7)	12(20.0)	09(15.0)	18(30.0)
05	Instant Messaging	11(18.3)	27(45.0)	12(20.0)	01(1.7)	09(15.0)
06	Social Networking Sites	16(26.7)	30(50.0)	05(8.3)	00(0.0)	09(15.0)
07	Academic Networking Sites	14(23.3)	28(46.7)	11(18.3)	00(0.0)	07(11.7)
08	Social Bookmarking sites	09(15.0)	22(36.7)	11(18.3)	03(5.0)	15(25.0)
09	Streaming Media	06(10.0)	15(25.0)	09(15.0)	08(13.3)	22(36.7)

It is observed from Table 6 that 50 per cent of LIS professional rated SNS in the good category, followed by Academic networking sites (46.7 per cent), IM (45 per cent), Wikis (41.7 per cent), Blogs (38.3 per cent), and Social bookmarking sites (36.7 per cent). Interestingly, 36.7 per cent of LIS professionals are ignorant about Streaming media followed by Podcasts (30 per cent) and RSS feeds (26.7 per cent).

Mobile based Library service skills

Today users are using mobile devices for their academic pursuits like learning and work environment. The libraries are making efforts to use mobile technology to make delivery of content and service faster. Libraries can provide various mobile services to the users like MOPAC, mobile database, mobile library tours, mobile SMS services, QR codes, mobile reference service, Library App, mobile websites and Augmented Reality. Libraries are incorporating mobile application in library services to make their services mobile friendly. Hallam and Ellard (2015) in their study mentioned that "library staff quickly needs to become fluent in the areas of digital literacies, ICT skills which include integration of social media and mobile application into library operations." Chanetsa and Ngulube (2016) in their study indicated "that respondents want skills in the use of mobile technologies like a cell – phones and tablet in education, knowledge of the construction of subject portals in teaching, learning, and research."

Table 7: Mobile-based Library Service Skills

S. No.	Mobile-based Library Service Skills	No. of Respondents				
		Excellent	Good	Fair	Poor	Unknown
01	Mobile website	11(18.3)	20(33.3)	13(21.7)	05(8.3)	11(18.4)
02	Library App	08(13.3)	22(36.7)	11(18.3)	06(10.0)	13(21.7)
03	Augmented Reality	04(6.7)	17(28.3)	07(11.7)	08(13.3)	24(40.0)
04	Quick Response (QR) Codes	08(13.3)	18(30.0)	10(16.7)	05(8.3)	19(31.7)
05	Mobile OPAC	14(23.3)	21(35.0)	11(18.3)	03(5.0)	11(18.4)
06	Mobile Databases	12(20.0)	19(31.7)	08(13.3)	07(11.7)	14(23.3)
07	Mobile Library Tours	09(15.0)	18(30.0)	12(20.0)	03(5.0)	18(30.0)
08	Mobile SMS Alerts	17(28.3)	19(31.7)	08(13.3)	04(6.7)	12(20.0)
09	Mobile Reference Services	12(20.0)	21(35.0)	08(13.3)	05(8.3)	14(23.4)
10	Mobile Floor Plans	07(11.7)	15(25.0)	11(18.3)	07(11.7)	20(33.3)

Table 7 represents that Library App tops the list with 36.7 per cent under good category followed by mobile OPAC and mobile reference service with 35 per cent each, mobile website with 33.3 per cent, Mobile databases with 31.7 per cent, and Mobile SMS Alerts with 31.7 per cent. However, Augmented Reality tops the list in an unknown category with 40 per cent followed by Mobile floor plans with 33.3 per cent, Quick Response Code with 31.7 per cent and Mobile Library Tours with 30 per cent.

Continuous Professional Development (CPD): Computer Skills Acquired Through Agencies / Institutes

To survive in today's digital environment, the LIS professionals need to acquire ICT skills through various agencies and institute which offers various ICT courses.

Table 8: Computer Skills acquired through Agencies / Institution

S. No.	Computer Skills Acquired Through Agencies / Institution	Number of Respondents	Percentage
01	Workshops	50	83.3
02	Conferences	36	60.0
03	Academic Staff College	28	46.7
04	Professional Associations (ILA,IASLIC,SLA, IFLA)	21	35.0
05	NISCAIR (New Delhi)	16	26.7
06	DRTC (Bangalore)	04	06.7

Note: Percentage exceeds 100 per cent because respondents were allowed multiple answers.

A multiple choice question was put before the respondents and responses are tabulated in Table 8 which depicts that 83 per cent of the LIS professionals opted workshops as the most preferred source of gaining Computer skills, followed by conferences (60 per cent), while 10 per cent of LIS professionals mentioned some private institute from where they can learn computer skills.

Further, three dichotomous questions was asked the respondents with regard to current position require on the job training to keep abreast of development in their work and responses are presented in Table 9.

Table 9: Current position requires on the job training

S.No.	Particulars	Yes	No
01	Participation in Continuous Professional Development (CPD) will increase your ICT skills	59(98)	01(2)
02	In-house training would help to improve your job performance	55 (92)	05(8)
03	Does your current position require on the job training to keep abreast of development in your work for your profession met your standards?	54(90)	06(10)

LIS professionals' participation in CPD helped them in improving their ICT skills in fast changing technological world. Table 9 indicates that 98 per cent of LIS professionals are of the view that participation in CPD will increase their ICT skills. This shows that "the LIS professionals have a positive look on CPD activities. To meet the needs of a user, the LIS professional must participate in CPD for increasing their ICT skills and knowledge. In-house training is a very important factor for LIS professional through which they learn various technologies and solve the existing organizational problem to face the ground situation" (Ajeemsha and Madhusudhan, 2014).

Table 9 presents that 92 per cent of respondents favor the idea that in-house training will improve their job performance. A study from Vijay Kumar and Sweety (2015) indicated with the same result that "majority of the library professionals opined that In-house training programmes have helped to update their ICT skills". Seena and Pillai (2014) in their study also suggest that "LIS professionals should be motivated for attending in-house training programme, workshops, and public lectures". Table 9 also depicts that majority of the respondents (90 per cent) preferred the on job training to keep them abreast of the latest development in the related work.

Role in Continuous Professional Development

An open-ended question with four choices was asked on the role such as, volunteer, organizer and participant and resource person of LIS professionals in CPD. The preferences of the LIS professionals are presented in Table 10.

Table 10: Role in Continuous Professional Development

S. No.	Particulars	No of Respondents
Role in CPD: If your organization ready to organize		
01	Participant	40(66.7)
02	Organizer	32(53.3)
03	Volunteer	16(26.7)
04	Resource person	15(25.0)
Role in Institution after CPD		
05	Share the Knowledge	47(78.3)
06	Involve in development of new services	28(46.7)
07	Provide infrastructure for implementation	19(31.7)
08	Assign new projects	18(30.0)
Issues in Participating in CPD		
09	Financial Problems	34(56.7)
10	Institution Problems	32(53.3)
11	Personal Problem	09 (15.0)
12	Family Problems	02(3.3)

Note: Multiple answers were permitted. Percentage is shown in parenthesis.

Table 10 depicts that more than 66.7 per cent of LIS professionals want to be a participant, followed by the organiser (53.3 per cent) and volunteer (26.7 per cent). Twenty five per cent of LIS professionals feel confident that they can give training to fellow LIS professionals. It is also revealed in the Table 10 that 78 per cent of the LIS professionals prefer to share their knowledge that they had learned after participation in CPD. 46 per cent prefer to develop new services after CPD which shows their commitment to users and organization. It was also observed that LIS professionals are facing many obstacles in participating in CPD activities. A question was put before the LIS professionals to evaluate the same and the information from Table 10 show that Financial problem is the primary issue, followed by Institutional problem (53 per cent) while 15 per cent find personal matters as the problem in the participation of CPD activities. Only 3 per cent of the respondents mention that family problems are the issues in participation in CPD. Kattimani and Naik (2013) suggested the same result wherein "the majority of the professionals are facing financial problems, work overload and negative attitudes from their administrators in acquiring ICT skills".

CONCLUSION
The present study has provided an understanding to identify the acquired ICT skills and competencies of LIS professionals in the studied college libraries. The findings showed that most of the LIS professionals are computer literate and have acquired knowledge and skill to manage the libraries. The LIS professionals have excellent skills in automation, but still lack skills in ICT skills and competencies in the areas of operating systems, IR tools, bibliographic standards,

electronic security and surveillance, cloud computing, Artificial Intelligence, Web 2.0 tools, Mobile based library services, etc. This reflects that LIS professionals still need to acquire and improve these skills in the areas mentioned above to provide effective and efficient services without wasting the time of the users which support the Fourth law of the Ranganathan "Save the time of the user." Lacking in advance ICT competencies and skills, the LIS professionals will not be able to face the challenges posed by ICT in present technology driven environment.

Herein, the LIS professional favored the CPD activities and are of the view that participation in CPD will increase their ICT skills besides some limitations of financial constraints, and other institutional problems. This study also opined that the results can be utilized in the contemporary library environment and will benefit the same in two ways; (a) LIS professionals can prepare themselves to compete in the digital environment, (b) with the change in users' need, the LIS professionals would understand the need to acquire skills, competencies, and knowledge related to ICT for managing information resources and services. The LIS professionals must adapt to changes which demand skills and competencies in order to survive and remain relevant in this technology driven change era to provide high quality ICT based services to the user. The LIS professionals need to update their skills and competencies on regular basis in constant changing technology environment. The present study provided the relationship between the efficiency of a library and the technical know-how of LIS professionals. The finding of the study has provided a platform for future LIS professionals to assess the need for ICT knowledge and bring positive changes with improved efficiency as a whole.

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