

Perceptions and Level of ICT Competencies: A Survey of Librarians at Public Sector Universities in Khyber Pakhtunkhwa, Pakistan

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This paper intends to explore the level of ICT competencies, and the training needs for updating these competencies among library professionals in Khyber Pakhtunkhwa, Pakistan. It also looks at the various approaches utilized by these professionals for acquiring ICT skills and problems faced by them in this

regard. Descriptive survey research method has been used for conducting this study. The population for this study comprised of 105 library professionals working in the 14 public sector universities in Khyber Pakhtunkhwa, Pakistan. The study revealed that the status of ICT competencies among library professionals in the region is unsatisfactory. Self-study is their main avenue of acquiring ICT skills and insufficient staff in the libraries is their main problem. Further training in establishing & maintaining a digital library software and using institutional repository software is their foremost training need for updating their ICT competencies. The results can be utilized by library administrators to organize regular ICT training programs to train library staff in modern ICT resources as per their needs and to eradicate any hurdle in updating staff ICT competencies. This study provides valuable insight into the level of the ICT competencies of library professionals in KPK, and provides a framework for the development of ICT competencies of library professionals in KPK and elsewhere. It would lead to the provision of qualitative and standardized library services to the patrons and would enable library professionals to benefit from modern

ICT resources in the field of library and information science.

Keywords: ICT competencies, library professionals, Information and communication technology skills, Academic libraries, Librarians' perceptions

Introduction

In the current information age, the environment of libraries has changed in terms of automated services to users, social media proliferation, methods used for scholarly communication, explosive growth of mobile devices and other applications. These changes have significantly impacted the library and information science professionals working in this new environment. In order to cope with these changes effectively and efficiently, a new generation of LIS professionals skilled in the use of Information and Communication Technology (ICT) is required. Haneefa and Shukkoor (2010) reported that ICT is a combination of tools and procedures that facilitate LIS professionals in the acquisition, storage, organization, searching, retrieval, and transmission of information through electronic means. Libraries and information centers are globally interconnected through ICT to share resources and services with each other. The deployment of ICT as a development instrument has raised varied opinions in the LIS research community regarding the relation between ICT and libraries.

Two types of studies have been conducted to explore ICT competencies among library professionals. One group of researchers has explored the demand for ICT competencies in the LIS job market by using the

method of analyzing different LIS job advertisements for the position of a library professional in different time periods (Beile & Adams, 2000; Gerolimos & Konsta, 2008; Khurshid, 2003; Kwasik, 2002; Mishra, 2009; Shiholo & Ocholla, 2003; Zhou, 1996).

The second group of researchers has explored the status of ICT competencies among library professionals in different institutions and in different locations (Ademodi & Adepoju, 2009; Adeyoyin, 2005, 2006; Hoskins, 2005; Mugwisi & Ocholla, 2002; Nath, Bahl, & Kumar, 2007; Safahieh & Asemi, 2010; Thanuskodi, 2011; Ugboma, 2008).

Most of these studies were conducted in the developing countries and showed low levels of ICT competencies among library professionals due to multiple reasons. In a developing country like Pakistan, there is scarcity of both types of studies regarding ICT competencies among library professionals.

Khyber Pakhtunkhwa (KPK) is an important province of Pakistan and has an estimated population of approximately 26.8 million according to the 2011 Census Bureau of Pakistan report. There are fourteen public sector universities in the province, where more than hundred library professionals (Directorate of Information Technology Government of Khyber Pakhtunkhwa, N.D) are providing services to research and academic communities.

To date, no comprehensive study has been conducted in KPK in order to identify the current status of ICT competencies among library professionals in the public sector university libraries of the province. It is therefore important to identify the current status of ICT skills in these academic libraries in order to address any shortcomings, as effective ICT competencies are essential for dynamic library professionals in the current information society.

In order to measure the ICT competencies of the library professionals in the study, the guiding research questions were: (a) What level of ICT skills are required to efficiently and effectively fulfill users' needs and demands? (b) What type of ICT skills help the library professionals to cope with the challenges of managing information in this modern age? (c) What methods do the library professionals use for acquiring ICT competencies? (d) What problems do they face in acquiring ICT competencies? and (e) To investigate the LIS professionals' educational and training needs in

regards to ICT competencies that allow them to keep pace with the technological development in the field of libraries and information centers.

The paper attempts to contribute to the local literature by exploring the level of ICT competencies in LIS professionals in KPK, their mode of acquisition of these skills and the problems faced by them in utilizing or accessing different ICT resources. Moreover, the study also endeavors to discover the training needs of library professionals with respect to the development of ICT competencies in the public sector university libraries in KPK. This study will be invaluable for LIS schools in guiding them to include appropriate practical training of ICT competencies as per the current needs and demands of professionals. It would also be useful in informing LIS curricula review and revisions. Furthermore, the study will be important for library managers in the public sector university libraries in KPK and other provinces facing similar issues; enabling them to organize ICT training programs in modern ICT resources according to the needs of their library staff.

Review of Related Literature

Authors consulted previous studies conducted to understand the level of ICT competencies of various social groups, such as teachers, students, academics and professionals (Tella, 2008; Gibson, 2007; Majid, 1999 and Fathiyan, 2004). However, this review will focus on literature on the LIS professionals' ICT competencies.

The literature review has been organized under the following themes: need of ICT competencies for the LIS professionals; their level of ICT literacy; resources needed for the development of ICT competencies in LIS professionals; problems facing LIS professionals in development of ICT competencies; and training needs of the LIS professionals regarding ICT competencies. meet the demands of the clients in the online and digital information scenarios, libraries must be equipped with ICT resources and staff with expertise in the concerned ICT resources (Batoool and Ameen, 2010).). Feret and Marcinek, as cited in Ayoku, and Okafor (2015), reported that an international survey of senior academic librarians concerning the future competencies for academic librarians concluded that ICT proficiencies and communication skills remain the most preferred. Zhou (1994) evaluated job



from 1974 till 1989, to explore the market demand for ICT skills in the United States of America during that time frame, and found that the demand for ICT competencies had progressively increased during the period. He discovered that the understanding of the bibliographic utilities such as OCLC or RLN, library automation, online database searching, microcomputer applications, mainframe computer applications, CD-ROM products, computer languages or programming, computer hardware, networks such as LAN or WAN, internet searching, digital resources and image technology or multimedia were the most required skills in job adverts. Rehman, Majeed, and Bakar (1997) proposed that the ICT competencies were indispensable competencies for academic library professionals. Baker (2005) stated that word processing, electronic mail, internet and intranet, graphics, presentation and publishing, spreadsheet, project management, designing development and administration of databases, system maintenance, design and development of web applications, system analysis and programming were the most significant ICT competencies needed for academic librarians.

Hoskins (2002) found a low level of ICT literacy among subject librarians at the university libraries of KwaZulu-Natal, South Africa, and their main problem was lack of proper ICT training programs. Ramzan (2004) reported a moderate level of ICT literacy in a population of 244 library professionals in Pakistan. He stated that the proper application of ICT resources in the libraries will improve the positive attitude of library professionals towards modern technologies in libraries. He further stated that this endeavor requires continuous education and training of staff. Watane, Vinchurkar and Chaukande (2005) found that majority of the college library professionals in Amravati city, India, were ICT literate and that more than 50% of the libraries were providing library services on the basis of available ICT resources. Adeyoyin (2005) found a very low level of ICT literacy in library professionals serving in the university libraries of Nigeria. Amar, Bahil, and Kumar (2007) also discovered low levels of ICT literacy and lack of proper ICT training programs in the academic library professionals serving in the Chandigarh city libraries in India. Hajar Safahieh (2010) reported low level of ICT competencies in library professionals serving in the university libraries

of Isfahan, Iran. She also found that their ICT skills had not improved despite using computers over an extended period of time. Siddike (2010) found that the levels of ICT literacy in library professionals in Bangladesh were not satisfactory. Ayoku, and Okafor (2015) also mentioned that library professionals in university libraries of Nigeria lacked sufficient ICT competencies. Kumar (2013), on the other hand revealed that LIS professionals in the engineering institutions of Andhra Pradesh State, India, had satisfactory level of ICT literacy. Ansari (2013) also found that majority of the LIS professionals in the universities of Karachi, Pakistan had moderate level of ICT literacy. Farahi, Tajafari and Tahamtan (2011) found low to moderate level of ICT literacy in the LIS professionals serving in medical colleges, dental colleges and pharmacy colleges in Iran.

Singh (1988) declared that continuing professional education, attending seminars and workshops, participating in various LIS conferences were main channels to promote ICT proficiencies. Ondari-Okemwa (2000), Garrod (2001) and McNicol (2002) suggested that continuous ICT training was mandatory for library professionals to improve ICT knowledge and skills. Moorthy (2001) recommended reorganizing the library and information science curricula in India to include ICT programs in the LIS curricula in order to prepare library professionals for the emerging ICT challenge. Ashcroft and Watts (2004) recommended extensive ICT training for LIS professionals to develop their ICT literacy. Kumar (2007) stated that the majority of the LIS professionals in college libraries of Kerala, India, were acquiring their ICT competencies through computer trainings, attending conferences and continuing education programs. Sivakumaren, Jeyaprakash, Geetha, and Gopalakrishnan (2011) recommended that LIS professionals should attend various training channels such as web based tutorials, workshops, seminars and conferences for promotion of ICT skills. Tzoc and Millard (2011) suggested that LIS professionals in U.S.A, should set up general purpose web servers with a basic LAMP/WAMP configuration, through which they can install open source content management systems, such as Drupal, Word press and D-Space for experimentation. These can help library professionals obtain guidance others for free and subscription based

online tutorials, from sources such as W3School.com and Lynda.com for developing their ICT skills. Moreover, they can also join online technical groups such as Code4Lib, where members share their valuable ideas on ICT skills.

Minishi-Majanja (2003) pointed out that lack of ICT competencies in staff, teachers, students, and limited access to computers are some common problems observed in various LIS programs. Batool and Ameen (2010) mentioned that insufficient coverage of ICT in the LIS curriculum, shortage of ICT training programs, lack of co-operation among LIS professionals and brief duration of library internship were the major obstacles in acquiring ICT skills. Siddike (2010) reported that for library professionals in Bangladesh, organizational hurdles, insufficient support from higher authority, lack of stable internet services, high costs of infrastructure development, insufficient ICT training programs, economic support, lack of proper scheduling, lack of standards and psychosomatic problems were the main hurdles in promoting ICT competencies. Kumar (2013) explored that poor infrastructural facilities and lack of cooperation from management were main problems in development of ICT competencies for LIS professionals in the engineering institutions of Andhra Pradesh State, India. Shivaputrappa and Ramesh (2013) found that LIS professionals in the engineering college libraries in Karnataka, India, were facing financial restrictions, excessive load of work and negative attitude of the managers in trying to acquire ICT competencies.

Ondari-Okemwa (2000) found that ICT literacy, computer software and hardware operating skills, internet usage techniques, knowledge about system analysis, written and verbal communication skills, library promotion skills, digital library skills and effective management techniques were main area in which library professionals in university libraries of Kenya desired further training. Mahmood and Khan (2007) reported that LIS professionals in Pakistan desired more trainings in indexing servers (zebra server) with proxy clients, computer programming, digital libraries, administration of DBMS, bibliographic formats, data analysis software (SPSS), citation software, networking (LAN/ WAN), hardware troubleshooting, database management system and MARC editors (MarcEdit) for advancement of their ICT

literacy. Ondari-Okemwa (2000) found that LIS professionals in university libraries of Kenya desired more training in ICT competencies, computer software and hardware operating skills, internet using techniques, knowledge about system analysis, written and verbal communication skills, library promotion skills, digital library skills and effective management techniques. Smith (2001) reported that LIS professionals in Australia needed training in ICT resources and that the employing organizations were interested in conducting in house training programs to promote library staff's ICT skills.

From reviewing the concerned literature, it is clear that ICT literacy is mandatory for LIS professionals for the survival of the LIS profession. As there has not been a comprehensive study conducted, to explore the level of ICT competencies and ICT training needs of the LIS professionals in the universities of Khyber Pakhtunkhwa, Pakistan, it was imperative that such a study be undertaken. The study will provide guidelines to universities administration in designing comprehensive training programs for the LIS professionals to improve their ICT literacy and the LIS schools can use its results to revise their curricula to include needed ICT knowledge and training.

Research Methodology

The research was conducted by adopting quantitative research design with a survey strategy of descriptive method. A self-administered questionnaire was designed to elicit information from the respondents in order to achieve the objectives of the study. The development of the preliminary sketch of the questionnaire was greatly aided by the relevant literature on ICT competencies among library professionals. The questionnaire was divided into five main parts on the basis of the requirements of the objectives of the study. Both close-ended and open-ended questions were included in different parts of the questionnaire. Before administering the questionnaire for data collection, a pilot study of the questionnaire was conducted in a sample of 22 the respondents from four public sector university libraries of Khyber Pakhtunkhwa, to test the questionnaire.

To ensure the validity of the questionnaire, several steps were taken. Firstly, a preliminary sketch of the questionnaire was designed after reviewing the relevant literature on ICT competencies among library

professionals. Secondly, the questionnaire was vetted by three assistant professors and four senior library professionals of library and information who are experts in survey research. Thirdly, the pilot study of the questionnaire was conducted in a sample consisting of 22 respondents from the 14 public sector university libraries in Khyber Pakhtunkhwa.

To ensure reliability of the questionnaire Cronbach coefficient alpha test was deployed to the main parts of the questionnaire, which revealed consistency in various statements of the main parts of the questionnaire with a Cronbach's Alpha score ranging from .721 to .90, indicating high reliability and internal consistency of the questionnaire (Cronbach, 1951).

The population of this study was 105 library professionals working in the 14 public sector universities in KPK. The researcher personally visited 70% of these universities to collect data. The remaining 30% were contacted via e-mail and postal-mail. A response rate of 95 % (100 /105) was achieved. SPSS 19 version was used for data analysis.

Results

One hundred library professionals participated in the

survey. Table one shows that majority of the respondents (90%) were male, while 10 (10%) were female (Khyber Pakhtunkhwa is a male dominant province of Pakistan). There were 34 (34%) professionals who were in the age group of 25-30 year, 39(39%) professional librarians were in the age group of 31-40 year, 9 (9%) were 41-50 years old and 18 (18%) were 51-60 years old of the 100 respondents, 33 (33%) possessed up to 5 years professional experience, 32 (32%) possessed between 6-10 years professional experience, 12 (12%) had 11-15 years' experience, while 4 (4%) professional librarians had 16-20 years' experience. Similarly, 4 (4%) professional librarians possessed between 21-25 year professional experiences while 15 (15%) had been working as a professional librarian for more than 25 years.

There were 2 (2%) library professionals with a qualification of Bachelor in Library and Information Science (BLISc), 91 (91%) professional librarians possessed Master in Library and Information Science (MLISc) and only 7 (7%) with Master of Science/Master of Philosophy (MS/M. Phil) as their highest professional qualifications. None of them possessed a Ph.D.

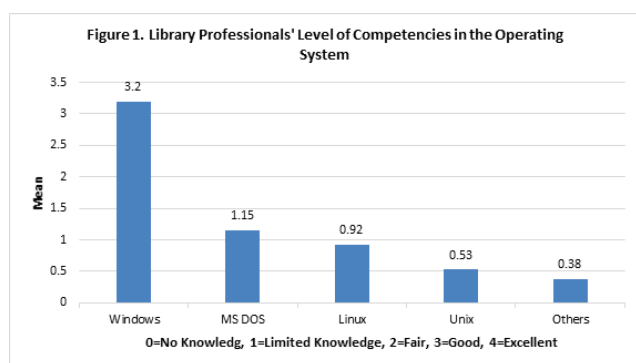
Table1.

Demographic Information of the Respondents

Demographic Information	Frequency	Percentage	Total
Gender			100
Male	90	90%	
Female	10	10%	
Age Group in (Years)			100
25-30	34	34%	
31-40	39	39%	
41-50	09	09%	
51-60	18	18%	
Working Experience (Years)			100
< 5	33	33%	
6-10	32	32%	
11-15	12	12%	
16-20	04	04%	
21-25	04	04%	
>25	15	15%	
Qualification			100
BLISc	02	02%	
MLISc	91	91%	
MS/M. Phil	07	07%	

Library Professionals Level of Competencies in the Operating Systems

Knowledge of operating systems is the basic requirement for operating computer systems. In this regard findings of the study revealed that majority of the professional librarians possessed good level of knowledge in operating Windows operating system, whereas they possessed limited knowledge of operating MS DOS and Linux systems. They possessed no knowledge of the UNIX operating system (See Figure.1)



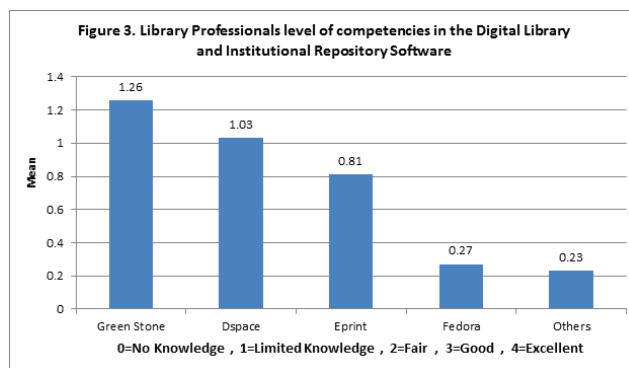
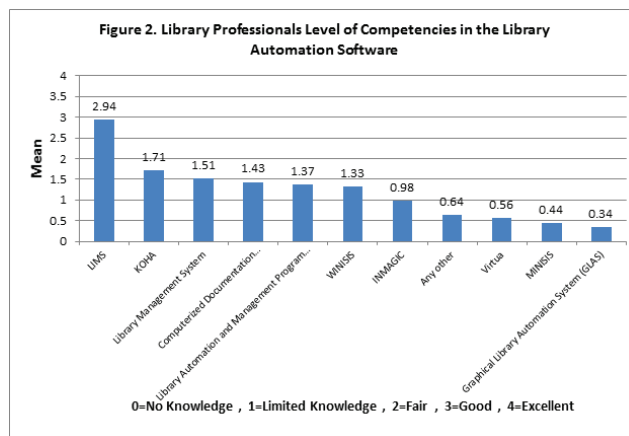
Library Professionals Level of Competencies in the Library Automation Software

Results of the study showed that majority of the professional librarians possessed good level of knowledge in use of LIMS (Local database designed in MS Access) software where as in Koha and Library Management System their level of knowledge was fair. In contrast they possessed limited knowledge of Computerized Documentation System/ Integrated Set of Information System (CDS/ISIS), Library Automation and Management Program (LAMP), WINISIS, INMAGIC, Virtua and other library automation softwares and possessed no knowledge of the MINISIS and Graphical Library Automation System (GLAS) (See Figure. 2).

Library Professionals Level of Competencies in the Digital Library and Institutional Repository Software

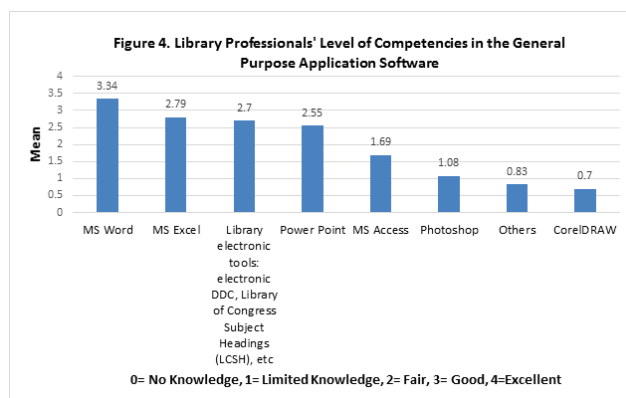
Digital library and institutional repository software are the latest ICT resources used in libraries for designing digital libraries and accessing information beyond the

physical confines of the library building. Findings of the study revealed that maximum number of professional librarians possessed limited knowledge of Greenstone, DSpace and E print while they possessed no knowledge of Fedora or any other digital library and institutional repository software (See Figure. 3).



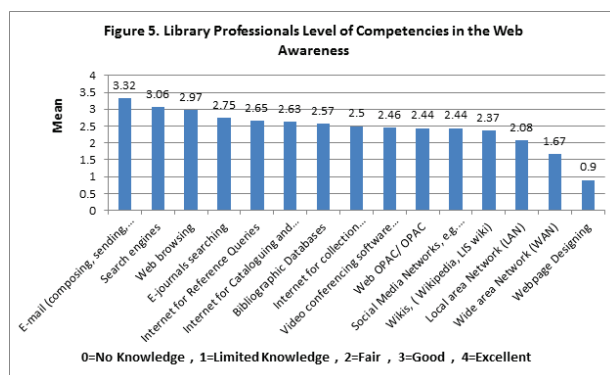
Library Professionals Level of Competencies in the General Purpose Application Software

Results of the study showed that majority of the professional librarians possessed good level of knowledge of MSWord, MS Excel, MS PowerPoint, and Library electronic tools e.g., Electronic DDC and Library of Congress Subject Heading (LCSH), etc., whereas their knowledge of MS Access was fair, and they had limited knowledge of softwares such as Photoshop, CorelDRAW and other general purpose application soft wares (See Figure. 4).



Library Professionals' Level of Competencies in Web Awareness

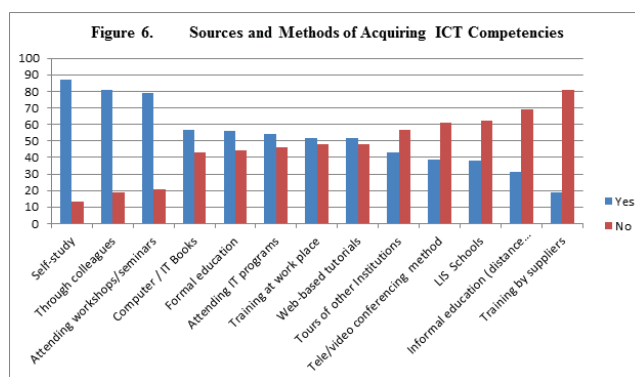
Figure 5 shows that majority of the professional librarians possessed good level of knowledge of using E-mail (composing, sending, receiving, and file attachment); Search engines; Web browsing; Bibliographic Databases; performing E-journals searching; and using the Internet for reference queries, cataloguing and classification, and for collection development. Similarly, they possessed fair level of knowledge of Video conferencing softwares e.g. Flickr, Skype, YouTube; Social Media Networks such as Face book, Orkut, MySpace, Blogs etc.; Wikis (Wikipedia, LIS wiki); Web OPAC/ OPAC; Local Area Network (LAN); and Wide Area Network (WAN). However, they possessed limited knowledge of webpage designing.



Sources and Methods of Acquiring ICT Competencies

The third objective of the study was to identify the main sources and methods of acquiring ICT

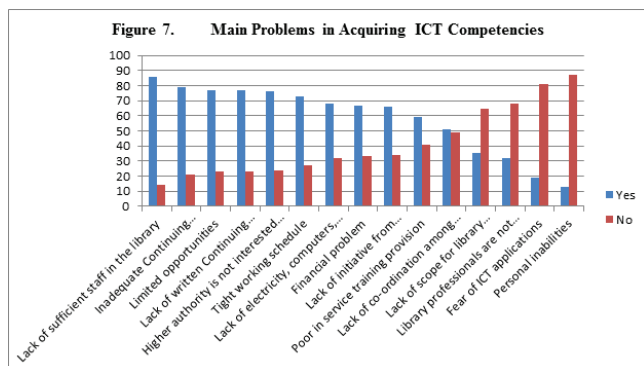
competencies used by these library professionals in KPK. In this regard the findings of the study revealed that library professionals' main source of acquiring ICT competencies was self-study (87%). Learning ICT competencies through colleagues (81%), attending workshops/seminars (79 %), computer / IT Books (57 %) and formal education (56 %) were also found to be common sources of acquiring ICT competencies. Tele/video conferencing (39 %), LIS schools (38%), informal education (31%) and training by suppliers (19 %) were other sources being adopted by library professionals at public sector universities in Khyber Pakhtunkhwa for acquiring ICT competencies (See Figure 6).



Main Problems in Acquiring ICT Competencies

The fourth objective of the study was to identify the obstacles being faced by library professionals serving in the public sector university libraries of KPK in acquiring and updating their ICT skills. In this connection the findings of the study revealed that library professionals' main problem in acquiring and promoting ICT competencies was lack of sufficient staff in the library (86 %). Inadequate continuing professional development activities (79 %), lack of written continuing professional development (CPD) policies (77%), limited opportunities (77 %), negative attitude of higher authorities to sending their library professionals for promoting ICT skills (76 %), and tight working schedule (73%) were also identified as major problems being faced by library professionals of Khyber Pakhtunkhwa in acquiring and improving ICT competencies. . Similarly lack of interest of library professionals in updating their ICT skills (32%), fear of ICT applications (19%), and personal inabilities (13%)

were some other problems found to be acting as hindrances in the promotion of ICT competencies of these library professionals (See Figure. 7).

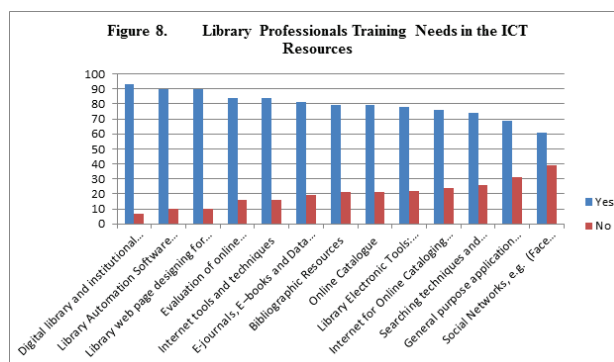


Library Professionals Training Needs in the ICT Resources

The fifth objective of the study was to investigate the educational and training needs of the library professionals of Khyber Pakhtunkhwa in various ICT resources. In this regard results of the study showed that digital library and institutional repository software (93%) was the main competency in which majority library professionals of Khyber Pakhtunkhwa wanted training. Similarly, library automation software packages (90%), library web page designing (90%), internet tools and techniques (84%), evaluation of online information resources (84%), e-journals, e-books and databases (81%) and online catalogue (79%) were the ICT resources identified as areas for further training for promotion of ICT skills in library professionals in KPK. Furthermore, the respondents also identified general purpose application software (69%) and social networks such as Facebook, Flickr, Blogs etc (61 %) as ICT resources they required further training in, however to a lesser degree (See Figure. 8).

Discussion

The findings of the study, have revealed that majority of the respondents possessed basic level of ICT competencies in using computer operating systems. The results of the study are similar to those found by Babu, Vinayagamoorthy, and Gopalakrishnan (2007) conducted in engineering educational institutions in Tamil Nadu where researchers found that majority of



library professionals were familiar with DOS and Windows operating systems, very few possessed any knowledge of Linux and UNIX.

With regards to library automation software, majority of the library professionals are competent in LIMS (Local database designed in MS Access), whereas their expertise was fair in KOHA. Thus results of this study that in the first instance library professionals are much more competent and expert in the library automation software designed at the local level according to their library needs, as compared to CDS/ISIS and Koha, which come at 2nd and 3rd place in terms of expertise, are also supported by reports of similar recent studies (Ayoku & Okafor, 2015; Haneefa & Shukkoor, 2010; Satpathy & Maharana, 2011; Thanuskodi, 2011).

In the digital library and institutional repository software, majority of the respondents' expertise was found to be of limited nature. Findings of this study that library professionals possess limited competencies in the digital library and institutional repository software especially in DSpace, E-print and Fedora are also supported by results reported by Haneefa and Shukkoor (2010), Raju (2014), Satpathy and Maharana (2011), and Thanuskodi (2011).

In general purpose application software and in web awareness, majority of library professionals' proficiencies are satisfactory. Findings of this study are concordant with the results of studies reported by other researchers (Babu et al., 2007; Haneefa & Shukkoor, 2010; Satpathy & Maharana, 2011)

Self-study is the main source of acquiring ICT competencies for the majority of the library professionals in the public sector universities of Khyber Pakhtunkhwa. Similarly learning ICT competencies through colleagues (81%), attending

workshops/seminars (79%), Computer / IT Books (57 %) and Formal education (56%) are common sources of acquiring ICT competencies as well. Babu et al., (2007), Farahi & Gandhi (2011), B.S. Kumar & Biradar (2010) also reported results similar to this study.

Lack of sufficient staff in libraries is the main problem of the library professionals in acquiring and promoting ICT skills. Moreover, inadequate continuing professional development activities (79 %), lack of written continuing professional development (CPD) policies (77 %), limited opportunities (77 %), negative attitude of higher authority to sending their library professional for promoting ICT skills (76 %) and tight working schedule (73%) are the major problems being faced by library professionals of Khyber Pakhtunkhwa in promoting ICT competencies. The results of this study are in accordance with the findings of the study conducted by Babu et al., (2007). Furthermore, findings of the study conducted by Farahi & Gandhi (2011) also revealed that lack of sufficient staff was a major problem in acquiring ICT competencies for medical library professionals in India, whereas lack of CPD policies, insufficient financial support, inadequate CPD activities and negative attitude of higher authority were the major problems for medical library professionals in Iran. Similarly, Satpathy & Maharan (2011) and Thanuskodi (2011) also indicated that among many other problems, tight working schedule, negative attitude of higher authority to send their library professionals for promoting ICT skills and poor service of training provision were the major problems faced by library professionals in updating their ICT competencies.

Digital library and institutional repository software is the ICT skill in which most of the library professionals want training. Similarly, library automation software packages (90 %), library web page designing (90%), internet tools and techniques (84%), evaluation of online information resources (84%), e-journals, e-books and databases (81%) and online catalogue (79%) are the ICT resources in which library professionals of Khyber Pakhtunkhwa are frequently needed to be trained for promoting ICT skills. Findings of this study are concordant with the results of the studies conducted by other researchers (Babu et al., 2007; Farahi & Gandhi, 2011; B. S. Kumar & Biradar, 2010; K. Kumar, 2013).

Conclusion and Recommendations

This study shows that library professionals in Khyber Pakhtunkhwa have basic knowledge in computer operating systems, digital library and institutional repository software. While they prefer to use local based library automation software such as LIMS, they have fair knowledge of KOHA. Only in general purpose applications software (MSWord, MS Excel, MS PowerPoint, and Library electronic tools e.g., Electronic DDC and LCSH) and in web awareness (E-mail, Search engines, Web browsing; Bibliographic Databases, E-journals searching, and using the Internet for reference queries, cataloguing and classification) they are satisfied. Self-study is the main source of acquiring these competencies and lack of trained professional staff is the major concern. Digital library and institutional repository software was found to be the ICT skill in which majority of the library professionals want training.

In the lights of the findings of the study it is suggested that LIS Schools in Khyber Pakhtunkhwa should thoroughly revise their LIS curricula to include LIS courses addressing current market needs of the profession. Moreover, these LIS courses should emphasize practical training in order to develop the required ICT competencies in LIS students. The duration of internship program should also be increased, so that the LIS students can further avail the opportunities for gaining practical training of ICT skills and improving their ICT competencies during their practicum.

The university authorities should provide complete ICT infrastructure to the university libraries and organize ICT training programs according to the needs of library staff to educate them in modern ICT resources. Moreover, they should provide different incentives to library professionals to motivate them initiate provision of ICT based services to the patrons in the public sector university libraries of Khyber Pakhtunkhwa.

The top management of academic libraries at the public sector universities of Khyber Pakhtunkhwa, should take practical measures to address the problems identified by the library professionals as obstacles in promoting their ICT competencies. The results of this study can provide a framework for

evaluating library professionals ICT competencies not only in Khyber Pakhtunkhwa, but also in the country.

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