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Status of Technological Competencies: A Case Study of University Librarians

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Introduction

Social institutions are run by the people for the people comprising a society. They reflect the pace of change in a society, and evolve accordingly. Technological developments have brought enormous changes in fabrication of all kinds of societies. Biological science curriculum centre (2005) defined technology as "A body of knowledge used to create tools, develop skills, and extract or collect materials; the application of science (the combination of the scientific method and material) to meet an objective or solve a problem".

Emergence of modern, high-tech, information society, changing mode of information carriers, and demand from print to digital resources have grossly affected libraries and Information centers. Now a day's libraries are not defined merely by their physical features, collections and automation, but from the services they offer. For facilitating digital age's demanding clients, libraries must be equipped with the desired technology and human expertise.

According to APLEN (2008) technological core competencies for library professionals are defined "as a combination of skills, knowledge and behaviors related to library technology and are important for organizational success, personal performance and career building". Chan (2005) describes how those with technological competencies,

enjoy learning and applying new technologies, analytical, familiar with concepts of computer use, able to transfer knowledge, pursues and demonstrate expertise in technology and can apply it as requires, internet and library system applications, can resolve routine problems without assistance and learn to use new technology quickly and adapts.

The fast growing technology makes academic libraries to face extra challenges in supporting academic and research programs, if they do not want to be perceived as warehouses for books. To meet the demands of an information society, libraries should be

furnished with advanced technological tools while librarians should advance their skills accordingly. Crawford (2006) expressed the concern as follows: "Do they know how to connect their mission to their community? Do academic libraries understand their function? Academic libraries need to figure out answers to these questions to survive." Human resources at any institution are very important to meet the goals of any organization. Information has become fast growing commodity and its easy and economical access is in demand. In this scenario libraries can be effective only if fully equipped with information communication technologies (ICTs). Literature establishes that a number of studies have been conducted to explore needed competencies of librarians to meet the challenges of digital age. For example, Babu and Gopalakrishna (2007) highlighted that development of ICT affects the profession of LIS at a large scale in terms of growing material, equipment, space, staff, readers etc.

Tyson (2007) stressed that with shaping of libraries, library staff should also be transformed to serve the present generation who need information anytime, anywhere. The skills of librarians should link to the technological infrastructure. He pointed out during late 90s the position of system librarian was created in libraries. It was as confusing then as it is today that whether this position should takeover by traditional librarian or by a technical expert. It was suggested by Tyson that skills audit of librarians can be a solution to address 21st century library issues. Now IT infrastructure is as necessary as electricity.

Literature reports two types of studies as follows: (i) measuring librarian's professional technological skills (ii) identifying librarians' needed IT and other competencies. Choi and Rasmussen (2006) conducted a study to identify the knowledge and skills required by current practitioners in US libraries. Findings show that 35% of respondents job responsibility based on website related activities, 26% based on digital project initiatives, 21.7% related to maintain technical standards and practices and only 17.3% related to other activities. These results illustrate the importance of acquiring technological expertise to survive in this information society.

In 2009, Mathews and Pardue conducted a content-analysis of randomly selected job ads from ALA online job list over a period of Oct. 2007-Mar. 2008. This study stressed on the substantial need for web development, project management, system development and system applications in the job requirements for librarians. This study suggests that librarians need a compulsory set of technological expertise. They mentioned the following necessary IT skills:

- Programming languages
- Networking
- Web development
- Project management
- System development
- System application

Similarly in Canada, Alberta Public Library Electronic Network (2008) designed a template to self check the core technology competencies of their library staff. With the use of this template the needed level of training can be analyzed for public library staff.

Prestamo (2001) proposed a comprehensive inventory of computer and related technological skills for academic reference librarians by using Delphi research method. She mentioned 285 important ICT skills to learn necessarily for academic librarians. Garrod (1998) reported that only those personnel required IT skills that had basic understanding of the philosophy of information professional and urge for learning. In Pakistan studies have been conducted on the use of IT in libraries, need analysis of ICT skills for librarians and their attitudes toward learning technology. Mahmood (2002) stated that academic libraries need updated skills and expertise in technology. Findings show that IT is more needed competency in the near future for academic librarians in Pakistan. In 2007, Mahmood and Khan again conducted a study and concluded that continuing education strategy is the compulsory element in developing professionals ICT skills. In this study different mode of training ICTs, training providers and contents of training were discussed. Librarians have IT anxiety also as reported by Ramzan and Singh (2009). Study highlighted that learning IT skills is the key factor in determining librarian's attitude towards IT.

The review established that studies have been conducted in developed countries to evaluate or self evaluate the technological skills and knowledge by designing different T-templates and checklists. There is a need to develop such a T-template and assess the technological expertise possessed by Pakistani librarians to serve digital age users.

Technology in Pakistani Libraries

Qazi (n.d.) stated, "Computers were introduced in mid 60's when second-generation computer was installed at Karachi" He reported that every year 450,000 new computers reach Pakistan and this number will increase 4-5 time in the near future. Libraries have also adopted computers for doing certain tasks in Pakistan. Since 1980s, efforts have been made to automate library catalogues. NLDP (Netherland library development program) contributed much in the development of IT in libraries. The project remained operational from June 1991 to May 1994. NLDP helped in establishing computer training centers in Pakistan and provided funds and equipment. Selected LIS faculty members and professionals were also trained in the Netherland and Pakistan. The literature reports that libraries are still trying to upgrade in terms of automation. This study is an attempt to assess the status of technological expertise of university librarians by adopting and customizing a technological template (T-template) designed by some international institutions for their staff. Many international organizations and libraries have used T-Template to assess IT competencies of their staff on regular basis in order to decide the level and type of training they needed. This study will help in determining the extent professionals are prepared to render desired information services to sophisticated users.

Research Aims

This study investigates the following questions:

- What type and level of technological skills are possessed by library professionals?
- What information sources are used to update technological skills?
- What are the major constraints in acquiring IT skills and knowledge?

Research Design

A case of eight librarians from the Faculty of Economics and Management, University of the Punjab was studied to identify their core technological expertise. The sampling was purposive as the University of the Punjab is the largest and oldest university of Pakistan. It has total thirteen faculties including science, social science, education, commerce, management, engineering, arts etc. There were three female and five male professionals working in different departments of the Faculty.

Structured interview including predetermined, close and open ended questions were used to collect data for this study. Due to IT jargons and terminology, structured interview was preferred to enquire the status of their technological knowledge and competencies. In the beginning of the interview the interviewees were briefed about the interview questions, related vocabulary, concepts and the overall structure of the interview. The questions were based on a technology evaluation list called Technological template (T-template) which was used by Education, libraries & heritage department (ELH) ICT service in UK, California and Alberta public libraries to assess their staff core technological expertise . It was adopted and customized for the local use.

The closed questions were about demographic information, their skills of computer hardware, word processing, troubleshooting knowledge, internet expertise and ILS (Integrated library systems). In some open-ended questions participants were asked to brief about the information sources they use to update their technology related knowledge. They were further asked to highlight the major constraints in acquiring core technological skills and related knowledge. The interview schedule was as follows:

Demographic information

Participants':

- Computer hardware skills
- Word processing skills
- Troubleshooting knowledge
- Internet expertise
- ILS (Integrated library systems) skills
- The sources used to update their technology learning
- . Basic problems faced in acquiring technological expertise

The study is only indicative due to the small sample and its findings cannot be generalized.

Scope, Limitation, Delimitation

This study includes eight library professionals from the Faculty of Economics & Management Sciences, University of the Punjab, Pakistan.. On the other hand technological template adopted and customized in this study can be further utilized to assess the technological expertise of other library professionals in Pakistan. Participants were provided a copy of this template for their future self assessment.

Key Findings

The findings demonstrate level of technical expertise of the respondents. The main categories addressed were computer hardware, word processing, internet, troubleshooting and integrated library systems. Respondents were asked about various IT parameters under three levels, i.e., 'no skills; learning; and proficient'.

Computer Hardware

Computer hardware expertise included awareness about the physical parts, their installation, troubleshooting and replacing. This portion of interview consisted of 18 questions covering these aspects. Out of eight, seven participants were proficient in these skills. Four had no skills in establishing wireless connection on laptop and were using only LAN connection for internet searching at their workplace. They would not use computers at home or out of office. Three of them had no skill in using control panel and did not know how to change hardware (mouse, keyboard, display etc.) settings. While filling questionnaire one of them told the researcher that "this section of skills are not part of my job. I have computer operator/network administrator for this purpose". Five participants were proficient in defragmentation process (process of rearranging files on hard disk to improve speed and storage capacity). Being information professional, one should be able to enhance storage capacity of computers.

Word Processing

Eight professionals were skillful in almost all word processing skills. They were proficient in formatting, inserting and applying different styles to documents. Being able to "Create personal template" and "insert hyperlink (a web address/reference)" skills were possessed proficiently only by two participants. Findings show that these professionals were not trying to enhance their learning. The urge to explore the technology or using advance options was lacking.

Troubleshooting and maintenance

Out of eight, six participants were with no skills in basic troubleshooting while this

expertise enables to identify "why my keyboard is not responding" etc. None of them was able to conduct basic network troubleshooting. Seven respondents were able to update their virus programs and communicate with the network administrator to solve the problem. None of them had skills in the area of computer programming (JavaScript, Perl etc.). Findings highlight that all participating professionals considered these technological areas part of their network administrator's job responsibility. One of them replied" it is a clerical type job and does not suit me, I have staff to perform this work". All of them restricted themselves to explore technology at certain level, only automation of libraries is their main technological area to be expert in. As stated by Ameen (2004) "library automation for most of the librarians meant computerization of library's catalog".

Internet

Internet expertise for the study meant one has knowledge to logon, enter web address, familiarity with different search engines, know basic internet terminology and emailing etc. Participant's internet expertise hardly marked proficiency. RSS feed most commonly translated as "Really Simple Syndication" which is a family of web feed formats used to publish frequently updated works—such as blog entries, news headlines, audio, and video—in a standardized format (Wikipedia) email alerts and subject directories were new terms for the professionals. They had no skills in utilizing these services. Google was the most favorite search engine among the professionals; they rarely used other search engines. Three of them were not sure that whether they knew the basic internet terminology (URL, scroll bar, tool bar etc.) Only one could differentiate between CC and BCC using email. All participants were able to send, reply and forward emails. The results show that participants are utilizing internet only for emailing and performing general searches. They are not familiar with the specialized services offered by different websites specifically for information professionals.

ILS (integrated Library System) Expertise

An ILS is used to track items owned, orders made, bills paid, and patrons who have borrowed. An ILS is usually comprised of a relational database, software to act on that database, and two graphical user interfaces (one for patrons, one for staff) (System, 2000). Analysis of responses revealed that participants were proficient in using web Dewy, OPACs, reading MARC records and operating all modules of library software. Only one respondent was providing electronic reference service, maintaining and designing digital library and proficient in copy cataloging. All of them had no skills in using RFID (radio frequency identification) system and knowledge of DBMS (database management system like SQL, ORACLE etc.). While filling questionnaire one of them commented about using SPSS that "I think this software is for statistician". All of the participants were proficient in organizing libraries (automation) but had no skills in providing electronic services except one. They hardly had any urge to explore new library related technology.

Use of Sources to Update

Respondents were asked to mention the most popular information sources which keep them updated about technology. All were of the view that training workshops, browsing internet, visiting different libraries and learning from colleagues and fellows are the best sources to keep themselves updated in the university environment. One of the respondents complained about the lack of cooperation from his colleagues. He said that university librarians hesitate in sharing or transferring professional knowledge and skills. Professionals stressed on the commencement of monthly workshops and advanced courses as part of continuing education at university campus.

Applicability of Technological Expertise to Job Environments

To know the demand of technology base information services at these libraries, respondents were asked that to what extent they were applying their expertise to job environment. They replied that their technological expertise is fully applicable to their delivery of information services. This shows that their libraries are fully automated, properly organized but lack in the provision of advance information services. Librarians lack user centered approach and mainly interested in organizing their library's physical material. They were satisfied with their expertise and seemed less motivated for self-learning. They were stressing that university administration should take some bold steps for the continuing education program for library professionals. Two participants mentioned that their library users and administration do not need any advanced information services as they themselves are not at ease with these latest technologies. They further said that first the library users will have to be IT advanced.

Problems in Learning Technology

They were also asked to mention what are the major constraints in learning technological skills?

The respondents mentioned major problems as follows:

- Lack of coverage in the curriculum
- Lack of refreshal courses/training workshops
- Colleagues and fellows are not cooperative
- Short library internship period

One respondent preferred to add more practice based IT courses in the curriculum. Although LIS curriculum of the Department of Library & Information Science, University of the Punjab has been updated in recent years. "There is a need to regularly update its contents as per market needs and demands" elaborated by one respondent. All participants expressed the need of refreshal courses and training workshops organized by the University in summer vacations. They said that due to long duty hours they cannot manage such trainings during work days. They believed that very few library professionals have advanced IT skills at campus but they hesitate to share their knowledge and expertise. Some young participants stressed on the need to enhance internship period during master program. They believed that this step will lead in producing more confident and skillful library professionals.

Conclusion

In the light of above discussion, it may be concluded that library professionals have that kind of IT expertise which is required to automate their library. To provide advanced technological information services, they need advance knowledge, skills and training. They must develop an urge to learn and explore new technological stuff. It is desirable to furnish our libraries with the state of the art IT equipments, but not without the librarians' IT knowledge and expertise. Conducive library atmosphere can be created with knowledgeable and skillful staff able to provide latest information services and make extensive use of the available IT based resources. IT is to serve the humanity instead of being prey to it. The T-template used for this study can help Pakistani LIS professionals to self evaluate their knowledge and skills. Libraries can use this template in assessing the technological expertise of their staff on regular basis. The template can be further modified, enhanced and updated as required.

Suggestions

This study furnish with the following suggestions:

- LIS curriculum should be updated regularly considering new technology demands in libraries.
- At present master program at the University of the Punjab includes eight weeks

- practical assignments, however, it may be for longer period to prepare better IT professionals.
- There appears a need to arrange refreshal courses and training workshop on learning technological proficiencies for university librarians.
- Libraries should adapt this kind of technological evaluation templates to assess their staff proficiencies.

References

Allardice, *C.* (2007). *Professional Skills for Librarians.* Retrieved May 5, 2009, from www.nglis.org.uk/2007%20Carryl%20Allardice.ppt

A.P L.E.N. (2008). *Core Competencies for Technology.* Retrieved March 29, 2009, from http://www.marigold.ab.ca/Publications/APLENCore_Competencies2007-08Final.pdf

Alberta Public Library Electronic Network (2008).Core competencies for technology, from http://www.yrl.ab.ca/pdf/Core%20Competencies%20Package%202007.pdf

Ameen, Kanwal (2004). Philosophy and framework of collection management and its
 applications in university libraries of Pakistan: An appraisal. Unpublished
doctoral dissertation, University of the Punjab, Lahore, Pakistan.

Babu, B.Ramesh, Vinayagamoorthy, P., & Gopalakrishnan, S. (2007). ICT Skills among Librarians in Engineering Educational Institutions in Tamil Nadu. *DESIDOC Bulletin of Information Technology, 27*(6), 55-64.

Biological science curriculum centre (2005). Using technology to study cellular and molecular biology: glossary. Retrieved May 20, 2009, from http://science.education.nih.gov/supplements/nih4/technology/other/glossary.htm

California library association (2005). *Technology Core Competencies for California Library Workers.* Retrieved May 5, 2009, from http://www.clanet.org/included/docs/tech_core_competencies.pdf

Chan, D. C. (2005). *Core competencies for public libraries in a networked world*. Retrieved from http://www.cais-acsi.ca/proceedings/2005/chan_2005.pdf

Choi, Youngkoh & Rasmussen,Edie,. (2006). What is needed to educate future digital librarians. *D-Lib Magazine, 12*(9). Retrieved from http://www.dlib.org/dlib/september06/choi/09choi.html

Eastern shores library system. (2000). ILS. Retrieved May 22, 2009, from http://www.esls.lib.wi.us/glossary.html

Glossary (2005). Retrieved on May 22, 2009 from http://science.education.nih.gov/supplements/nih4/technology/other/glossary.htm

Mahmood, Khalid & Ajmal, Mohammad (2007). ICT training for LIS professionals in Pakistan: a need assessment. *Electronic library and information systems, 141*(4), 418-427.

Mahmood, Khalid. (2002). Competencies needed for future academic librarians in Pakistan.
 Education for information, 20, 27-43.

Mahmood, Khalid. (1998). *Information technologies in Libraries*. Lahore: Pak Book Corporation.

Mathews, Jannie M.& Pardue, Harold.(2009). The Presence of IT Skill Sets in Librarian position announcements. Retreived April 22, 2009 from http://www.ala.org/ala/mgrps/divs/acrl/publications/crljournal/preprints/Mathews-Pardue.pdf .

Orenstein, D. (n.d.). *Trends in the Library Profession and the Impact of Technology at the Montgomery College Libraries.* Retrieved from http://www.mjfreedman.org/orenstein.pdf

Prestamo, A. M. (2001). A comprehensive inventory of technology and computer skills.

for academic reference librarians. [abstract] Retrieved 2009 from
http://d.wanfangdata.com.cn/NSTLHY_NSTL_HY2102849.aspx

Qazi, W. M. (n.d.). Role of information technology in the development of Pakistan.
Takveen.Retreived on May 21,2009 from
http://www.khwarzimic.org/takveen/infotech_pakistan.pdf

Ramzan, Mohammad & Singh, Dilgit.(2009). Factors affecting librarians attitude towards IT
application in libraries. *Electronic library, 27*(4).

Ramzan, Mohammad. (2004). Effects of IT utilization and knowledge on librarians. *Eletronic
library, 22*(5), 440-447.

Technology education: grade 8 Glossary of selected terms (n.d.). Retrieved May 20, 2009,
from http://home.comcast.net/~pm1963/grade8/vocab.htm

Tyson, L. (2007). Convergence or collision? when IT and library skills meet. 1-6. Retrieved
May 06, 2009 from
http://conferences.alia.org.au/online2007/Presentations/30Jan.B3.convergence.or.collision.pdf

What's your story and why should they care? (2007, winter). Quarterly Newsletter of
ACRL/NY, 25(1) .Retrieved September 07, 2009 from http://www.acrlny.org/v25n1.pdf

Wikipedia. RSS Retrieved May, 25, 2009, from http://en.wikipedia.org/wiki/RSS_(file_format)