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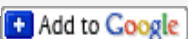
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Developing Technology Skills for Academic Librarians: A Study Based on the Universities in Kerala, India

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Introduction

In the changing information age library professionals have to gain extensive knowledge about developing technologies and improve their skills to manage these technologies. Computers, connectivity, and electronic information have redefined the image of library profession and the services provided through library and information centres. The rapid developments in Information Communication Technologies (ICT) have given a solid foundation for revolutionary changes in the information handling capabilities of academic libraries and information centers all over the world. According to Katz and Macklin (2007) technology is the portal through which we interact with information, but people's ability to handle information to solve problems and think critically about information tells us more about their future success than their knowledge of specific hardware or software. The academic librarian of this decade has to possess a portfolio of technology related skills in order to complement and support the navigational skills. Such skills help library staff to manage the information more widely and, in turn, transfer these skills to the users as appropriate. These skills include: word processing, desktop publishing, use of bibliographic software packages, spreadsheets, graphics, packages, bulletin-board, familiarity with data and file manipulation, maintaining WWW files, familiarity with local automated systems, IT troubleshooting, and familiarity with different operating systems (Morgan, 1996).

Related Studies

Several studies have been reported to study the skills required by library professionals in an electronic environment. Adeyoyin (2006) in a survey conducted among members of staff of 28 university libraries in West Africa to ascertain their information and communication technology (ICT) literacy level, found that there was a need for knowledge acquisition among the librarians in Nigerian university libraries to be able to offer efficient

services and that the ICT literacy among the librarians was low. Safahieh and Asemi (2008) assessed the computer literacy skill of librarians in Isfahan University of Iran. The results indicated that majority of the librarians have acquired their computer skill through informal channels. Library software is the most commonly used software among librarians and the less used software was database management software. The most common problem cited in computer usage was frequent breakdown of system, electric power failure, and inadequate computers in the libraries and librarians' inadequate computer skill. Ramesh Babu, Vinayagamoorthy and Gopalakrishnan (2007) conducted a study of ICT skills among librarians in engineering educational institutions in Tamil Nadu to identify the types of ICT skills, assess the level of skill, the means of acquiring ICT skills and identify the constraints in acquiring such skills by the librarians. The study found that the librarians of these institutions have acquired basic skills in ICT, but they lacked knowledge about network-based services and digital library services.

According to Biddiscombe (2001) Internet and IT skills are required by information professionals in their support for learning, teaching and research within the changing context of the higher education sector in the UK and the development of managed (or virtual) learning environments. Though IT skills, particularly in relation to the Internet are essential, some of the more basic skills that are important to the information professional should not be abandoned. Even though several studies are documented with regard to the skills required by library professionals in an electronic environment, relatively less research has been undertaken with respect to library professionals in the Universities in India especially Kerala. Hence it is hoped that this study will help the library professionals and University authorities to take necessary steps to improve their skills and strive towards providing better technology based services to the academic community.

Objectives

The aim of the study is to analyse the skills and awareness of library professionals in an electronic environment. The main objectives are:

- To study the skills and awareness of library professionals about various technologies, ICT applications and services.
- To evaluate the attitude of library professionals towards ICT applications
- To examine the problems faced by library professionals in effective utilization of ICT applications
- To suggest measures to improve the knowledge and skills of library professionals

Methodology

The study is based on a questionnaire survey of library professionals employed in the central and departmental libraries of the seven major Universities in Kerala including University of Kerala, M.G. University, Cochin University of science and Technology, Sree Sankara University, Kerala Agricultural University, University of Calicut and Kannur University. The library system in all the Universities follow a decentralized pattern with a Central library and department libraries attached to the teaching departments of the universities. All the library professionals are liable to work in the central and departmental libraries and hence transferable as per existing rules in each University. The results of the survey were analysed using Excel package.

Results and Findings

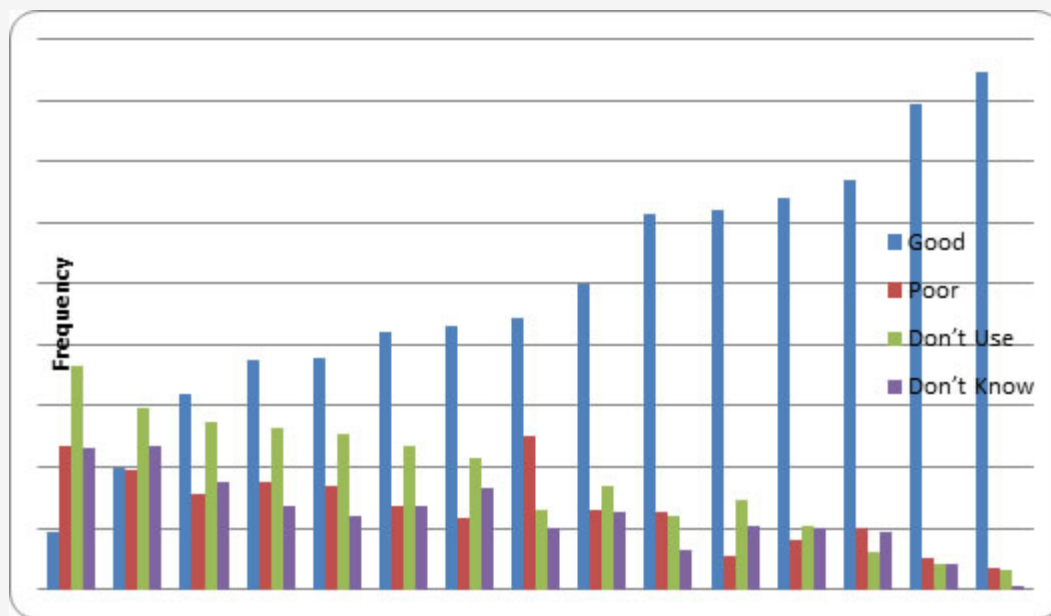
The analysis of the results showed that most of the professionals are not directly linked with ICT based services. In most of the Universities it was observed that ICT based services are being provided by a small group of trained library professionals or computer professionals and majority of the qualified library professionals don't get an opportunity to be familiar with ICT services or they are mostly unaware of the facilities in their own institution. Data regarding the ICT literacy of library professionals were analyzed and are presented under the following subheadings.

Awareness/skill and use of different technologies

Library professionals were asked to specify their awareness or skill in the use of various technological devices including computer hardware, mobile technology, digital camera, laser printer, scanner, etc.

The Fig 5.1 represents the frequency of the library professionals' familiarity with the various technologies listed. From the figure it is clear that the library professionals are moderately skilled in the use of different technologies and devices relevant in the present information era. It was found that mobile phone (91.4%) and internet (86%) is the most used and familiar of all the technologies. Only a few have indicated that they don't use mobile phone (3.2%) or internet (4.3%). CD/DVD related technology is the next known item commonly known to 72.4% of professionals. Other familiar technological devices are Laser printer, (69.2%), Barcode Scanner (67%), Digital Camera (66.5%), Memory Stick like flash drive or USB (54%). Other items familiar to less than 50% of professionals are computer networking (48%), Image Scanner (46.5%), MP4 Player (45.4%), LCD/Multimedia Projector (41.1%), Webcam, (40.5%), Wireless Internet (34.6%), E-book Reader (21.6%), and the least familiar and least used among library professionals RFID Technology (10.3%). 39.5% of the professionals have not used RFID technologies and 24.9% are unaware of it.

Figure 1. Awareness/skill and use of different technologies



Awareness /skill for ICT based applications and services

In order to evaluate the skills in using various ICT based applications and services in general, the library professionals were asked to specify their awareness about Operating systems, Management of electronic resources, Designing web pages, Programming languages, Software Installation, System administration, and advanced concepts like Metadata and HTML/XML formats.

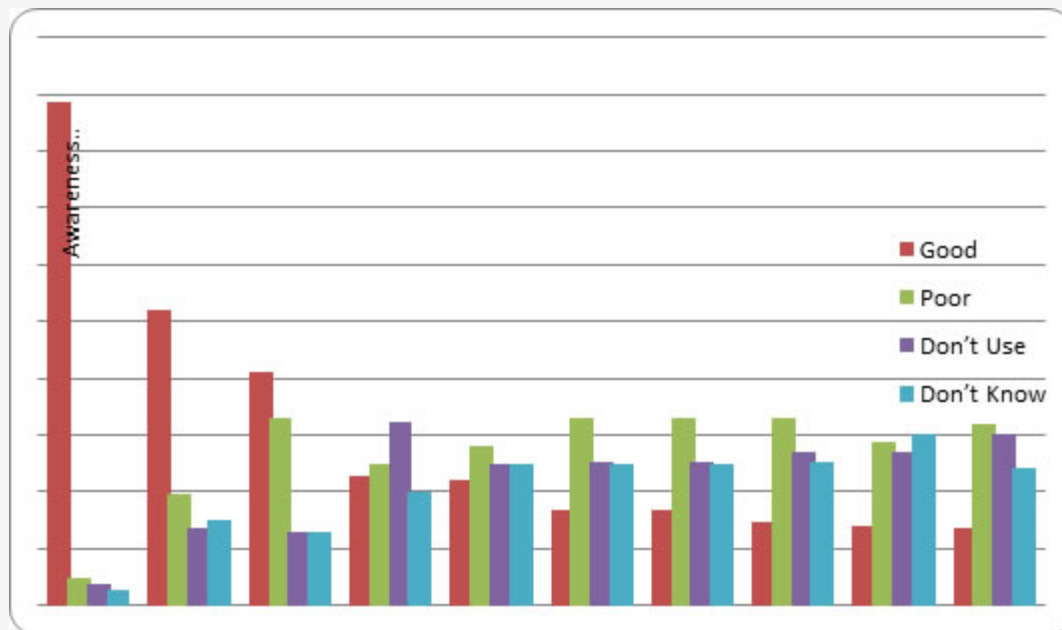
Infonet project of UGC (University Grants Commission) in joint collaboration with INFLIBNET has played a major role in modernizing University Libraries and it has helped in providing access to online resources of major publishers on the desktop. Access to online journal resources has been activated to almost all the University Libraries. Most of the library professionals are familiar with the E-resources and it has contributed not only to the research output of the academic community but also to an extent has helped the research oriented library professionals.

Though Microsoft Windows is most commonly used by University libraries, Linux is also becoming popular among library professionals. Library software available in open source like KOHA is being implemented in University Libraries as in the case of CUSAT for automating library services.

Among the Universities in Kerala, CUSAT and MG University has developed institutional repositories (IR) of research publications and thesis. Computer system administration and maintenance is a task evaded by most of the library professionals. In Universities it is usually supervised by computer staff, but library professionals have to develop some technical skills for the appropriate repairs of systems in their control.

The degree of awareness of library professionals in ICT based applications and services is graphically represented in Figure 2.

Figure 2. Awareness /skill for ICT based applications and services



It is clear that a good majority (88.6%) of the library professionals is skilled in Operating system Windows. Management of electronic resources is reasonably known to 51.9% of professionals. It is seen that 41.1% of the professionals are skilled in Linux operating system while the remaining is either unaware or less skilled in Linux. Further analysis of the skills of library professionals shows that 22.7% are skilled in IR (Institutional Repositories) based activities while 20% are not skilled and 32.4% don't use it. Only 22.2% of the professionals have good skills in system administration and maintenance and others are not aware or never undertake such tasks. Only 16.7% professionals have skills in creating an HTML / XML document. While skills in Software installation and Web page designing found 16.7% and 14.6% of professionals, for Creating Metadata only 14% of professionals are found to be skilled. Least number of professionals are skilled in Programming languages (13.5%), and the remaining all are either not skilled or never use programming languages. Thus it is evident that though in an electronic environment these skills are relevant, but the application of such skills in University libraries is very limited.

Use of Web Tools and Services

In the last few years developments in Web has brought out a variety of online tools and platforms which has helped people to communicate with their thoughts, opinions and experiences. Web 2.0 encompasses a wide range of applications and tools ranging from blogs to social networking sites to wikis which has also influenced the field of library and information science. There is immense pressure on University libraries to modernize the services they offer to the academic community. Library professionals can apply Web 2.0 tools to provide innovative library services and deliver its services in the ways that its

modern users expect.

The frequency of use of some of the important Web based services and tools by the library professionals are analysed and the results are presented in the Table 5.3.

Around 13% of professionals did not respond to the questions on Web tools. It was found that Email/Instant messaging or Chat was frequently used by 85.9% of professionals , and a few 2.3% has never used it. Wikis was frequently used by 69.1 % and never used by 13.0%, Discussion groups was the next known web service frequently used by 42.8% and never used by 21.7% of professionals., Social Networking sites was used regularly by 41.6% professionals less frequently by 29.5%, and never used by 28.9% of professionals.

Listservs was found commonly used by (33.3%), but more number of professionals (40.4%) never used such services. Audio/video sharing/webcasting tools like YouTube, Flickr was often used by 28.8% ,but never used by 31.9% Weblogs was often used by 25.2% and never used by 36.5% professionals. Other less frequently used Web tools are Social book marking/aggregating(16.6%), RSS feeds(11.9%), and the least accepted web application was Content management systems used by very few (3.8%) , less commonly used by (22.5%) and never used by majority of library professionals(73.8%).

It is evident that the developments in web tools and services are not fully utilized by most of the professionals maybe because the applications of web tools is yet to be popular in University libraries.

Table 5.3 Use of web tools and services

Web Tools/Services	Frequently	Not Frequently	Never	Total Response
Blogging (Twitter, weblogs)	42 (25.2%)	64 (38.3%)	61 (36.5%)	167 (100.0%)
Audio/video sharing/webcasting (Flickr, Skype, YouTube)	46 (28.8%)	63 (39.4%)	51 (31.9%)	160 (100.0%)
Email/instant messaging/chat	152 (85.9%)	21 (11.9%)	4 (2.3%)	177 (100.0%)
Discussion groups (Google/Yahoo! Groups)	71 (42.8%)	59 (35.5%)	36 (21.7%)	166 (100.0%)
Listservs (Lisforum, Nmlis)	52 (33.3%)	41 (26.3%)	63 (40.4%)	156 (100.0%)
RSS feeds	24 (16.6%)	42 (29.0%)	79 (54.5%)	145 (100.0%)
Wikis (Wikipedia , LISWiki)	112 (69.1%)	29 (17.9%)	21 (13.0%)	162 (100.0%)
Social book marking/aggregating (Delicious, FriendFeed)	18 (11.9%)	41 (27.2%)	92 (60.0%)	151 (100.0%)
Social networking (Orkut, Face book)	69 (41.6%)	49 (29.5%)	48 (28.9%)	166 (100.0%)
Content management systems (Drupal, Joomla)	6 (3.8%)	36 (22.5%)	118 (73.8%)	160 (100.0%)

5.4 Awareness of Library automation software

The library professionals' knowledge of various library automation softwares available was analyzed and the results are depicted in the Table 5.4 below. It is found that CDS /ISIS is the most common software known to a good majority of 71.4% library professionals. LIBSYS is the software used in the Universities of Kerala and Calicut, and is also known to 70.8% of the library staff.

Table 5.4 Awareness of Library automation software

Library Software	Aware	Not aware	Total
CDS/ISIS	132 (71.40%)	53 (28.60%)	185 (100%)
LIBSYS	131 (70.80%)	54 (29.20%)	185 (100%)
SOUL	114 (61.60%)	71 (38.40%)	185 (100%)
KOHA	99 (53.50%)	86 (46.50%)	185 (100%)
WINISIS	83 (44.90%)	102 (55.10%)	185 (100%)
LIBSOFT	69 (37.30%)	119 (62.70%)	185 (100%)
ALICEfor Windows	38 (20.50%)	147 (79.50%)	185 (100%)

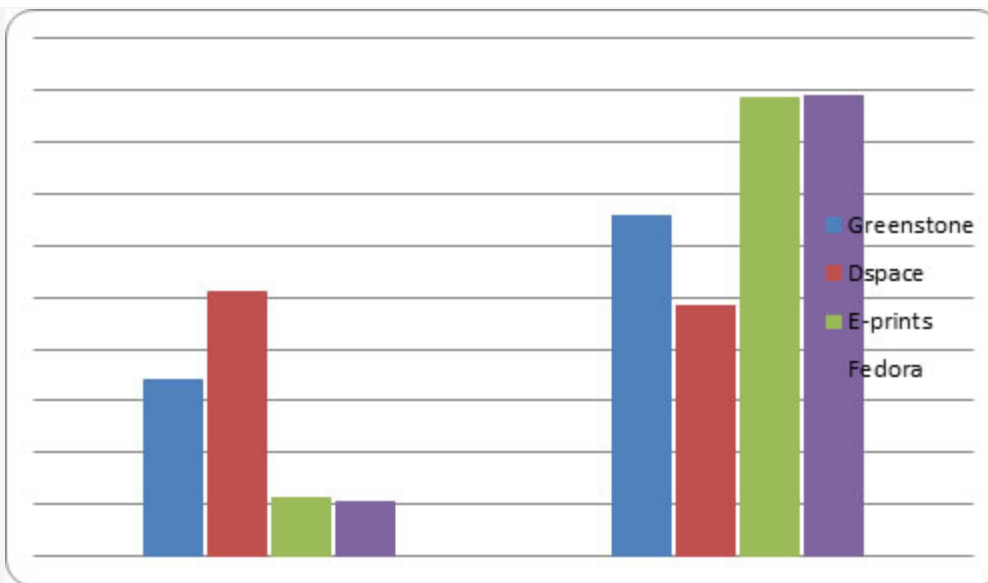
While SOUL is the automation software used in MG University and Kannur University libraries, it is familiar to 61.6% professionals. KOHA open source library software was implemented recently in CUSAT library system. It is found to be known to 53.5% of professionals.

WINISIS, the windows version of CDS/ISIS is known to 44.9%. 37.3% professionals are familiar with LIBSOFT commonly used in college libraries in Kerala. ALICE for windows is not very popular but it is used in Sanskrit university and known to 20.5% professionals. Other lesser known and not favored softwares are NEWGENLIB (7%), LIBRARY MANAGER (4.3%), ABCD and OPENBIBLIO (3.2%), EVERGREEN (2.2%) , PHP MY LIBRARY and MANDARIN 1.6% and 1.1% respectively.

Awareness of Digital library software

Digital library softwares are used for setting up digital collections of library holdings and diverse types of digital works that deal with subjects associated with the institution. Digital library softwares common in academic libraries are Greenstone, D- space, E-prints and to lesser extent Fedora. The library professionals were asked to indicate whether they are aware of the digital library softwares. The results of analysis as shown in the Fig 5.5 indicate that knowledge about Digital library software is less among the respondents. Only D-space is familiar to more than 50% of professionals (51.4%) ,whereas Greenstone is known to 34.1% of professionals . Other not very common digital library softwares are E-prints known to only 11.4% and a great majority (88.6%) is not aware of it. Similarly Fedora is known to 10.8% professionals and most of the professionals (89.2%) are not aware of it. Only few libraries have initiated Digital library services and this may be the reasons for low level of awareness about these softwares among the library professionals.

Figure 3. Awareness of Digital library software



Library professionals' attitude towards ICT application

The Table 5.6 shows that most of the library professionals agree with the positive aspects of ICT listed in the study. Majority of the library professionals agreed that ICT application facilitate quick access to current data , improve quality of library services, helps to enhance knowledge and skills of library professional , and helps to improve the status of library with more than 90% positive responses. The professionals also agreed that ICT application helps to improve communication (80.5%), increase job satisfaction of library professionals(78.9%), makes an integration within the library (68.1%), and helps to reduce workload of library professional(66.5%), all of which shows high positive responses. Of the two negative aspects listed, to the variable ICT disturbs routine work of the library only 10.8% agreed and majority 77.3% was against this concept. Similarly to the variable ICT affects regular budgeting provision, 18.4% agreed and majority (63.2%) disagreed. Thus it is evident that library professionals have a highly positive attitude towards the application of information communication technology services and its applications.

Table 5.6 Library professionals' attitude towards ICT application

Sl.no	Attitude	Agree	Disagree	No Response	Total
1	ICT application facilitate quick access to current data	180 (97.3%)	0	5 (2.7%)	185 (100%)
2	ICT application improve quality of library services	180 (97.3%)	2 (1.1%)	3 (1.6%)	185 (100%)
3	ICT application help to enhance knowledge and skills of library professional	171 (92.4%)	7 (3.8%)	7 (93.8%)	185 (100%)
4	ICT application increase job satisfaction	146 (78.9%)	20 (10.8%)	19 (10.3%)	185 (100%)
5	ICT application helps to improve communication	149 (80.5%)	16 (8.6%)	20 (10.8%)	185 (100%)

6	ICT application improve status of library	167 (90.2%)	6 (3.2%)	12 (6.5%)	185 (100%)
7	ICT makes an integration In library	126 (68.1%)	29 (15.7%)	30 (16.2%)	185 (100%)
8	ICT application reduce workload of library professional	123 (66.5%)	47 (25.4%)	15 (8.1%)	185 (100%)
9	ICT disturbs library routine works	20 (10.8%)	143 (77.3%)	22 (11.9%)	185 (100%)
10	ICT affects regular budgeting provision	34 (18.4%)	117 (63.2%)	34 (18.4%)	185 (100%)

Problems faced in the effective utilization of ICT applications

The library professionals' opinion relating to the problems faced in the effective utilization of ICT applications was analyzed and the results are presented in the Table 5.7. From the table it is clear that inadequate training is the main problem in the effective utilization cited by majority of library professionals (90.3%).

Table 5.7 Problems faced in the effective utilization of ICT applications

S.No	Problems	Frequency
1	Inadequate training in ICT applications	167 (90.3%)
2	Lack of infrastructure	134 (72.4%)
3	Lack of support from authorities for implementing ICT applications in library	109 (58.9%)
4	No support from administration in training library professionals	101 (54.6%)
5	Lack of co-ordination among library staff	85 (45.9%)
6	Lack of initiative from professional associations to conduct specialized training programmes	73 (39.5%)
7	Fear of ICT applications	29 (15.7%)
8	Lack of interest on the part of users	26 (14.1%)
9	Lack of scope for Library professionals due to ICT applications	17 (9.2%)

Other major issues indicated by library professionals are lack of infrastructure(72.4%), lack of support from authorities for implementing ICT applications in library(58.9%) and lack of support from administration in training library professionals(54.6%). Some other issues which was indicated by lesser number of professionals include lack of co-ordination among library staff(45.9%) and lack of initiative from professional associations to conduct specialized training programmes(39.5%). Only few professionals had opinion that fear of ICT applications (15.1%) and lack of interest of users (14.1%) caused problems in effective use of ICT.

Lack of scope for library professionals due to ICT applications was also cited as an issue by very few professionals (9.2%).It was also observed that some libraries did not provide adequate facilities for staff which was quoted by some library professionals as an issue that hindered their interest in ICT applications. Lack of career advancement opportunities was also cited by few library professionals as an issue in the proper use of ICT application. Another major threat to the effective use of ICT was the lack of adequate back up facilities for computers and other systems.

Suggestions for updating knowledge and skills

Library professionals were asked to indicate their suggestions for updating their knowledge and skills. As evident from the Table 5.8, majority of Library professionals (88.2%)in their responses gave utmost priority to In-house training and workshops , and next preference to searching Internet for relevant professional information (71.9%).

Table 5.8 Suggestions for updating knowledge and skills

	Suggestions	Frequency
1.	In-house training programmes for staff development	163(88.2%)
2.	Searching internet for relevant professional information	133(71.9%)
3.	Regularly reading relevant professional literature	129(69.7%)
4.	Regular attendance of relevant conferences/workshops	127(68.7%)
5.	Discussion of professional matters with colleagues	115(62.2%)
6.	Learning from web resources	113(61.1%)
7.	Attending professional association meetings	80(43.2%)
8.	Undertaking individual research work/publication	76(41.1%)
9.	Reading general books/literary works	73(39.5%)
10.	Going for higher studies/formal courses	65(35.1%)
11.	Involvement in teaching	41(22.2%)

While third preference is given to regularly reading relevant professional literature(69.7%), regular attendance of relevant conferences/workshops(68.7%) is the next preferred option. Discussion of professional matters with colleagues(62.2%)was one important updating

activity preferred by the library professionals. Learning from web resources accounted to 61.1% of the suggestions , while other suggestions for updating activities both formal and informal less preferred include attending professional association meetings(43.2%),undertaking individual research work/publication(41.1%), reading general books/literary works (39.5%), going for higher studies/formal courses (35.1%) and interestingly the least preferred mode of updating professionals' knowledge or skills is found to be involvement in teaching which was suggested by only 22.2% respondents. Few library professionals also quoted that for efficiency in ICT no formal training or education is required, it can be acquired by self study through internet.

Conclusion

The analysis of ICT skills reveals that library professionals are moderately skilled in various technologies and applications, but the awareness level was low in the case of emerging web tools and services. It was observed that the younger professionals showed more interest in emerging technologies and ICT based services. Most of the library professionals have a positive attitude towards the application of ICT based services in libraries. But infrastructure facilities in University Libraries in Kerala are not enough to provide the library staff valuable experience in the emerging technologies and support professional development which in turn will help in providing enhanced technology based services to the users. The main problems in ICT utilization was the lack of training in ICT applications as pointed out by majority of library professionals.

University administration and Library associations in particular, must give due importance to organize training programmes and workshops to equip the professionals with the required skills in modern technologies. Equal opportunities should be provided to all professionals irrespective of their grades and designations to participate in continuing education programmes. Library science departments across the country have to take vital steps to restructure library science curriculum, and incorporate significant changes to cater to the demands and challenges of library science profession.

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