DESIDOC Journal of Library & Information Technology, Vol. 30, No. 6, November 2010, pp. 55-63

Information and Communication Technology Literacy among Library Professionals in Calicut University, Kerala

Mohamed K. Haneefa and C.K. Abdul Shukkoor

University of Calicut, Kerala
E-mail: hanee4u@gmail.com; abdulshukkoor.ceeyem@yahoo.com

ABSTRACT

This study aims to ascertain the Information and Communication Technology (ICT) literacy among the library professionals of Calicut University. The study is confined to the library professionals in the central library and departmental libraries of Calicut University. The method used for the study was a structured questionnaire. The study reveals that the Professional Assistants are more ICT literates than the Junior Librarians and Assistant Librarians. The use of ICT-based resources and services, library automation software, and general purpose application software is high among the Professional Assistants than the Junior Librarians and Assistant Librarians. The use of digital library and institutional repository software is very low among the library professionals. Majority of the professionals had confidence in routine ICT and Internet tasks, and need training or orientation in library automation, digital library and institutional repository software.

Keywords: Literacy, information and communication technology, assessment, university libraries, librarians, academic libraries, India

1. INTRODUCTION

Information and communication technology (ICT) is the biggest achievement in the evolution of mankind. ICT is any system designed to gather, process or distribute information or it is the science and skill of all aspects of computing, data storage, and communication. ICT may be any combination of tools and procedures that facilitate the generation, acquisition, storage, organisation, searching, retrieval, and transmission of information using electronic means[1]. ICT fundamentally changes the access, storage and dissemination of information, and facilitates global interconnectivity, and accelerated information exchange[2]. ICT literacy is the ability to use digital technology, communication tools, and/or networks appropriately to solve information problems including the ability to use technology as a tool to research, organise, evaluate, and communicate information and the possession of a fundamental understanding of the ethical/legal issues surrounding the access and use of information[3].

There is a growing concern over library professionals' insufficient level of ICT literacy. The ICT literacy skills, necessary for library professionals in the emerging knowledge driven society, are continuously changing. Library professionals in developed countries moved quickly to learn and adopt new information technologies. They raised their level of knowledge of new information technologies through continuing education programmes, professional training, and through revisions in their library and information school curriculums[4]. However, application of ICT is posing a particular challenge to library professionals in developing countries. Despite the high penetration rate of ICT and exponential growth of Internet, many library professionals in India lack the ICT literacy skills.

University of Calicut, the second university to be set up in Kerala, came into being in 1968 with the objective of developing human resources in the northern districts of Kerala by extending the reach of higher education and promoting research in all areas of development with particular emphasis on technology, art, and culture of Kerala. The University has a fully-computerised Central Library and 28 partially computerised departmental libraries. The Central Library has a fairly good ICT infrastructure including a very active INFONET Centre. Generally university libraries are positive towards library automation and application of ICT in library operations and services. However, no library can render ICT-enabled services without qualified and competent library

Received on: 01 June 2010

professionals. ICT literacy is very essential for being productive information professional in a knowledge driven society. The present study attempts to investigate the ICT literacy among the library professionals of Calicut University.

2. REVIEW OF LITERATURE

There have been many studies focused on different aspects of ICT literacy. Safahieh and Asemi[5] assessed the level of computer literacy skills of librarians in University of Isfahan, Iran. The investigation revealed that majority of the librarians did not posses a good level of computer skills and even their long experience of computer use had not necessarily improved their level of computer literacy. Choudhury and Sethi[6] analysed the computer literacy of library professionals in the university libraries of Orissa. The study showed that majority of the professionals were computer literates and majority of them opined that they should be provided orientation for the use of electronic resources. Haneefa[7] discussed the ICT training in special libraries in Kerala. The study revealed that majority of the special libraries in Kerala provided different types of training facilities to their staff and users. For all types of training methods, self-learning through reading manuals/documentation and in-house workshops were the most common training methods used. Rekabdarkolaei and Amuei[8] evaluated differences in ICT literacy among trainee student and teachers from the view of sexuality.

The study showed that no significant differences were found between females' and males' previous experience with ICT. Korobili, Malliari, and Christodoulou[9] investigated the attitudes and perceptions of Greek librarians regarding information literacy programmes. It revealed that most libraries did not delivered information literacy programmes, but some kind of library instructions. Many respondents considered that more money, more librarians and an appropriately equipped space were the best ways to improve information literacy programmes. Haneefa[1] found that most of the special libraries in Kerala were hampered by lack of funds, lack of infrastructure, and lack of skilled professionals to embark on automation of all library management activities and application of ICT.

Adeyoyin[10] assessed the ICT literacy level among the staff of Anglophone (English speaking) university libraries and their counterparts in Francophone (French speaking) university libraries in West Africa. The results showed that out 370 professional librarians only 179 were ICT literates while the remaining 191 professional librarians were ICT non-literates. Only the 40 Senegal university professional librarians had an ICT literacy level of 100 per cent. Adomi and Anie[11] conducted a survey to assess the computer literacy skills of professionals in Nigerian university libraries. The study revealed that most of the respondents did not possess a high level of computer skills but their use of computers and technology was maturing. A majority of them acquired their computer skills from computer/IT training programmes, and used library automation software more frequently than other software packages and used the computer for personal purpose than for library routine.

In another study, Adeyoyin[12] assessed the level of ICT literacy among the library staff of Nigerian university libraries. Analysis of the data showed that out of 268 professional librarians, only 87 were ICT literates. Okiy[13] reviewed the state of ICT application for information provision in Nigerian university libraries. It revealed that the obstacles militating against effective application of ICT in the university libraries were inadequate funding, inadequate electricity supply, and shortage of competent manpower for operation and maintenance of ICT facilities. Ramzan[4] conducted a survey of 244 librarians in Pakistan to assess their attitude towards the application of information technology (IT). The study revealed that awareness of the potential of Information Technology, recency of attaining professional qualifications, and knowledge in IT had a significant relationship with librarians' attitudes towards the application of IT. The study also revealed that librarians' level of knowledge in technology is a good predictor of their attitude towards application of IT in libraries.

In general, computer literacy and ICT literacy are studied and discussed at different levels. However, there is a little research that focuses on the ICT literacy of library professionals in developing countries like India. No comprehensive study of ICT literacy of library professionals across the country has been undertaken. Thus, there are still gaps in this area that are open for future research. This study provides an insight into the current ICT literacy of library professionals in the universities of third world. This paper will enable library professionals of universities in India to intensify their efforts to enhance the ICT literacy.

3. OBJECTIVES OF THE STUDY

The objectives of the study were:

- To assess the ICT literacy among the library professionals of Calicut University.
- To assess the current use of ICT-based resources and services by the library professionals of Calicut University.
- To assess the confidence of the library professionals in handling various ICT tasks.

- To identify the training or orientation needs of the library professionals in ICT-based resources, services, and tools.

4. METHODOLOGY

To meet the specific objectives of the study a quantitative research methodology along with a comprehensive literature review were employed. The study population comprised of library professionals working in the Central Library and departmental libraries of Calicut University. Sixty-nine library professionals were identified for the study. But despite several attempts, one library professional did not replied. The library professionals were classified according to their designation into four categories: 42 (61.5 per cent) Professional Assistants, 10 (15 per cent) Junior Librarians, and 16 (23.5 per cent) Assistant Librarians. Structured questionnaires were prepared and distributed to these library professionals. The data collected through the questionnaires were converted into machine-readable form and imported into the Statistical Package for the Social Sciences SPSS. The data were analysed and inferences were made based on standard statistical methods. Analysis of the data provided an in-depth interpretation for fulfilling the four research objectives.

5. RESULTS AND DISCUSSIONS

5.1 Types of Computer Education Possessed by the Library Professionals

The library professionals were asked to indicate the type of computer education possessed (Table 1). The data reveals that 27 (40 per cent) professionals, 7 (17 per cent) Professional Assistants, 7 (70 per cent) Junior Librarians and 13 (81 per cent) Assistant Librarians, possessed informal computer courses. Twenty-two (32 per cent) professionals, 18 (43 per cent) Professional Assistants, one Junior Librarian and 3 (19 per cent) Assistant Librarians possessed short-term computer courses. Twelve (18 per cent) Professional Assistants like DCA course. Seven (10 per cent) professionals possessed PGDCA course. Table 1 shows that the young Professional Assistants possess more formal and informal computer education than the Junior Librarians and Assistant Librarians. No professional possessed MCA, BTech or MTech degrees in Computer Science. PGDCA was the highest qualification possessed by the professionals. Very few professionals possessed diploma in computer applications. The professionals need to improve their formal and informal computer education. The senior professionals need to take necessary steps to enhance their ICT literacy by attending workshops and training programmes.

5.2 Use of ICT-based Resources/Services/ Tools

ICT literacy can be enhanced effectively through relevant and contextual use of ICT technologies[14]. The library professionals were asked whether they use any of the ICT-based resources/services/tools. Table 2 shows that the use of ICT-based resources and services was high among the Professional Assistants than the Junior Librarians and Assistant Librarians. The library professionals need to improve the use of various ICT-based resources, services, and tools so that they can provide effective information services to their library users.

5.3 Use of Software

Library professionals must be proficient in the use of software like operating system, library automation software, and digital library and institutional repository software. Efficient use of software enables effective computer based information services. Different types of software used by the library professionals in Calicut university and the responses are summarised in the following sections.

5.3.1 Use of Operating System

The library professionals were asked to indicate the extent of use of operating systems. Table 3 shows that Microsoft Windows is the most widely used operating system than Linux. The University should take initiative

Table 1. Computer education possessed by the library professionals

Computer courses	Possessed by			
	Professional Assistants	Junior Librarians	Assistant Librarians	Total
Informal	7 (17 %)	7 (70 %)	13 (81 %)	27 (40 %)
Short-term courses	18 (43 %)	1 (10 %)	3 (19 %)	22 (32 %)
DCA	12 (29 %)	-	-	12 (18 %)
PGDCA	5 (12 %)	2 (20 %)	-	7 (10 %)

Table 2. Use of ICT-based resources/services/tools by llibrary professionals

ICT-based resources/ services/tools	Used by			
	Professional Assistants	Junior Librarians	Assistant Librarians	Total
CD-ROM	39 (93 %)	7 (70 %)	12 (75 %)	58 (85 %)
DVD	37 (88 %)	7 (70 %)	8 (50 %)	52 (76 %)
VCD	35 (83 %)	6 (60 %)	8 (50 %)	49 (72 %)
Printer	39 (93 %)	8 (80 %)	10 (63 %)	57 (84 %)
Scanner	27 (64 %)	7 (70 %)	5 (31 %)	39 (57 %)
Smart card	7 (17 %)	2 (20 %)	1 (6 %)	10 (15 %)
Laptop	15 (36 %)	4 (40 %)	5 (31 %)	24 (35 %)
CD-Net server	11 (26 %)	-	5 (31 %)	16 (24 %)
Bibliographic database	22 (52 %)	5 (50 %)	5 (31 %)	32 (47 %)
Full-text Database	17 (40 %)	4 (40 %)	4 (25 %)	25 (37 %)
e-books	28 (67 %)	4 (40 %)	3 (19 %)	35 (51 %)
e-mail	39 (93 %)	6 (60 %)	11 (69 %)	56 (82 %)
Pen drive	29 (69 %)	5 (50 %)	8 (50 %)	42 (62 %)
Internet	39 (93 %)	5 (50 %)	9 (56 %)	53 (78 %)
FTP	13 (31 %)	2 (20 %)	-	15 (22 %)
Telnet	5 (12 %)	3 (30 %)	3 (19 %)	11 (16 %)
Orkut	25 (60 %)	4 (40 %)	4 (25 %)	33 (49 %)
Mailing list	19 (45 %)	3 (30 %)	7 (44 %)	29 (43 %)
Search engines	28 (67 %)	6 (60 %)	8 (50 %)	42 (62 %)
e-journals	33 (79 %)	8 (80 %)	12 (75 %)	53 (78 %)
Blog	14 (33 %)	1 (10 %)	2 (13 %)	17 (25 %)
Chat	19 (45 %)	2 (20 %)	-	21 (31 %)
Gopher	1 (2 %)	1 (10 %)	-	2 (3 %)
WAIS	-	1 (10 %)	-	1 (1 %)
Video conferencing	7 (17 %)	3 (30 %)	1 (6 %)	11 (16 %)
OPAC	36 (86 %)	2 (20 %)	4 (25 %)	42 (62 %)
Web OPAC	19 (45 %)	2 (20 %)	5 (31 %)	26 (38 %)

Table 3. Use of operating system by library professionals

Operating System	Used by			
	Professional Assistants	Junior Librarians	Assistant Librarians	Total
Windows	36 (86 %)	9 (90 %)	11 (69 %)	56 (82 %)
Linux	21 (50 %)	4 (40 %)	7 (44 %)	32 (47 %)
Unix	3 (7 %)	1 (10 %)	-	4 (6 %)
Solaris	1 (2 %)	-	-	1 (1 %)
MS DOS	19 (45 %)	-	3 (19 %)	22 (32 %)
Others	1 (2 %)	4 (40 %)	-	5 (7 %)

to introduce open-source operating systems like Linux. The platform for most of the open-source library management and digital library software is Linux. It will be better to network the libraries with Linux operating system, and the University should provide training to the library professionals in Linux operating system.

5.3.2 Use of Library Automation Software

The library professionals were asked to indicate the use of library automation software. Table 4 shows that the use of library automation software was high among the Professional Assistants than the Junior Librarians

Table 4. Use of library automation software

Library automation software	Used by			
	Professional Assistants	Junior Librarians	Assistant Librarians	Total
Libsys	29 (69 %)	4 (40 %)	11 (69 %)	44 (65 %)
SOUL	9 (21 %)	-	1 (6 %)	10 (15 %)
Koha	18 (43 %)	2 (20 %)	4 (25 %)	24 (35 %)
Winisis	10 (24 %)	3 (30 %)	3 (19 %)	16 (24 %)
Libsoft	7 (17 %)	-	1 (6 %)	8 (12 %)
CDS/ISIS	21 (50 %)	4 (40 %)	3 (19 %)	28 (41 %)
Others	2 (5 %)	2 (20 %)	-	4 (6 %)

and Assistant Librarians. Koha was the widely used open-source integrated library management software. Eighteen (43 per cent) Professional Assistants were using Koha software. The University should encourage the use of open-source-software for library automation and organise workshops and training in open-source library management software.

5.3.3 Use of Digital Library and Institutional Repository Software

The library professionals were asked whether they use any of the digital library and institutional repository software. The analysis from the Table 5 shows that the use of digital library and institutional repository software was very low among the professionals. The library professionals should take initiatives for the development of digital libraries and institutional repositories in their libraries. The University should organise workshops and training for the design and development of digital libraries and institutional repositories.

5.3.4 Use of General Purpose Application Software

The library professionals were asked whether they use any application software for general purpose. Table 6 indicates that MS Word is the most widely used application software for general purposes among the library professionals. The use of application software for general purpose is high among the Professional Assistants than the Junior Librarians and Assistant Librarians. A large majority of the Professional Assistants use MS Word and Excel software. Majority of the Junior Librarians and Assistant Librarians use MS Word software. The University should encourage the use

Table 5. Use of digital library and institutional repository software

Digital library and institutional repository software	Used by			
	Professional Assistants	Junior Librarians	Assistant Librarians	Total
Greenstone	10 (24 %)	1 (10 %)	1 (6 %)	12 (18 %)
DSpace	5 (12 %)	1 (10 %)	-	6 (9 %)
Eprint	1 (2 %)	-	-	1 (1 %)
Others	-	1 (10 %)	-	1 (1 %)

Table 6. Use of general purpose application software

Application software	Used by			
	Professional Assistants	Junior Librarians	Assistant Librarians	Total
MS Word	41 (98 %)	6 (60 %)	10 (63 %)	57 (84 %)
MS Excel	39 (93 %)	4 (40 %)	8 (50 %)	51 (75 %)
Power Point	31 (74 %	4 (40 %)	8 (50 %)	43 (63 %)
MS Access	12 (29 %)	2 (20 %)	-	14 (21 %)
Photoshop	21 (50 %)	2 (20 %)	3 (19 %)	26 (38 %)
Coral Draw	7 (17 %)	2 (20 %)	-	9 (13 %)
Others	2 (5 %)	1 (10 %)	-	3 (4 %)

of open-source software packages like Open-office. The library professionals should take necessary steps to enhance the use of application software for general purpose for improved information services.

5.4 Frequency of Use of Different ICT-based Resources and Services

The library professionals were asked to indicate the frequency of use of different ICT-based resources and services. Table 7 shows that even though the library professionals claim that they use different ICT-based resources and services, the frequency of use of these resources and services were very low. A few professionals used these resources and services almost every day.

5.5 Confidence in Handling ICT Tasks

Confidence is a pre-requisite for effective use of ICT and therefore the library professionals were asked to state their level of confidence in handling ICT tasks (Table 8). They were provided three categories of tasks including routine ICT tasks such as opening, saving,

Table 7. Frequency of use of different ICT-based resources and services

ICT-based Resources and Services	Nearly once in a month	2-3 times in a month	About once in a week	2-3 times in a week	Almost every day
OPAC	8 (12 %)	1 (1 %)	3 (4 %)	7 (10 %)	24 (35 %)
Bibliographic databases	4 (6 %)	2 (3 %)	5 (7 %)	5 (7 %)	16 (24 %)
Full-text databases	4 (6 %)	2 (3 %)	7 (10 %)	3 (4 %)	7 (10 %)
E-journals	7 (10 %)	6 (8 %)	5 (7 %)	6 (9 %)	14 (21 %)
Web browsing	3 (4 %)	4 (6 %)	2 (3 %)	5 (7 %)	24 (35 %)
E-mail	6 (9 %)	4 (6 %)	3 (4 %)	7 (10 %)	25 (37 %)
FTP	4 (6 %)	-	1 (1 %)	1 (1 %)	6 (9 %)
Telnet	3 (4 %)	1 (1 %)	2 (3 %)	-	-
Mailing list	3 (4 %)	3 (4 %)	1 (1 %)	5 (7 %)	7 (10 %)
Search engines	3 (4 %)	2 (3 %)	3 (4 %)	3 (4 %)	23 (34 %)
Word processing	6 (9 %)	3 (4 %)	1 (1 %)	8 (12 %)	14 (21 %)
Spreadsheet	5 (7 %)	3 (4 %)	1 (1 %)	9 (13 %)	6 (9 %)
Powerpoint	9 (13 %)	5 (7 %)	1 (1 %)	5 (7 %)	4 (6 %)

Table 8. Confidence in routine ICT tasks

Routine ICT tasks	I can do this very well myself	I can do this with help from someone	I know what this means, but I can't do it	I don't know what this means
Open a file	62 (91%)	2 (3%)	1 (1%)	3 (4%)
Play computer game	59 (87%)	2 (3%)	3 (4%)	4 (5%)
Save a computer document or file	61 (90%)	3 (4%)	1 (1%)	3 (4%)
Delete a computer document or file	61 (90%)	3 (4%)	2 (3%)	2 (3%)
Draw pictures by using mouse	56 (82%)	5 (7%)	2 (3%)	5 (7%)
Print computer document or file	58 (85%)	5 (7%)	2 (3%)	3 (4%)
Scroll a document up and down	64 (94%)	1 (1%)	-	3 (4%)
Create or edit a Document	61 (90%)	3 (4%)	-	4 (6%)
Transfer files	55 (81%)	8 (12%)	-	5 (7%)
Copy a file from a CD	48 (71%)	8 (12%)	2 (3%)	10 (15 %)

deleting, moving, copying, creating, and editing files, Internet tasks such as downloading files, writing and sending e-mail, attach a file to an e-mail message, and high level ICT tasks such as creating presentation, using spreadsheet, using database, constructing webpage, finding computer viruses and creating computer programs. The analyses shows that a large majority of the professionals are confident in routine ICT tasks.

5.5.1 Confidence in Handling Internet Tasks

Internet literacy is a subset of computer literacy, which is generally defined as the basic knowledge, skills, and attitudes needed by all citizens to be able to deal with computer technology confidently in their daily life[15]. The Internet skills are becoming very important for all library professionals as more and more library operations and services can be performed more effectively by using the Internet. The library professionals were asked to indicate their confidence in handling Internet tasks. Table 9 reveals that a large majority (87 per cent) of the professionals can get into the Internet and write and send e-mail very well by themselves.

Majority of the professionals can copy/download files from Internet (72 per cent), attach a file to an e-mail message (68 per cent), and download music (56 per cent). Ten (15 per cent) professionals can copy/ download files from Internet with the help of others. Eight (12 per cent) professionals know what attach a file to an e-mail message means, but they can't do it. A few (18 per cent) professionals don't know what download music from Internet means.

5.5.2 Confidence in Handling High-level ICT Tasks

The library professionals were asked to indicate their confidence in handling high-level ICT tasks. Table 10 reveals that about half of the professionals can use a database (56 per cent) and create a presentation (51 per cent) very well by themselves. A good number of the professionals can use a spreadsheet (40 per cent) and use a software and get rid of computer viruses (34 per cent) very well by themselves. A few of the professionals can create a multimedia presentation (29 per cent), construct a webpage (24 per cent) and create a computer program (18 per cent) very well by themselves. A few (18 per cent) professionals can use a database, create a presentation, and use a spreadsheet with the help of others. It was found that majority of the professionals are not very much confident in handling high-level ICT tasks.

Table 9. Confidence in handling Internet tasks

Internet tasks	I can do this very well myself	I can do this with help from someone	I know what this means, but I can't do it	I don't know what this means
Get in to the Internet	59 (87 %)	3 (4 %)	5 (7 %)	1 (1 %)
Copy/download files from Internet	49 (72 %)	10 (15 %)	4 (6 %)	5 (7 %)
Attach a file to an e-mail message	46 (68 %)	7 (10 %)	8 (12 %)	7 (10 %)
Download music from Internet	38 (56 %)	13 (19 %)	5 (7 %)	12 (18 %)
Write and send e-mail	59 (87 %)	4 (6 %)	4 (6 %)	1 (1 %)

Table 10. Confidence in handling high-level ICT tasks

High-level ICT Tasks	I can do this very well myself	I can do this with help from someone	I know what this means, but I can't do it	I don't know what this means
Use a database	38 (56 %)	12 (18 %)	5 (7 %)	13 (19 %)
Create a presentation	35 (51 %)	12 (18 %)	8 (12 %)	13 (19 %)
Use a spreadsheet	27 (40 %)	12 (18 %)	14 (21 %)	15 (22 %)
Use a software and get rid of computer viruses	23 (34 %)	15 (22 %)	12 (18 %)	18 (26 %)
Create a multimedia presentation	20 (29 %)	13 (19 %)	15 (22 %)	20 (29 %)
Construct a webpage	16 (24 %)	16 (24 %)	16 (24 %)	20 (29 %)
Create a computer program	12 (18 %)	21 (30 %)	12 (18 %)	23 (34 %)

5.6 Training or Orientation Needs in ICT-based Resources and Services

Training is an integral component of staff development and well-organised institutions have staff development as a central hub in their personal policies. Training makes an important method of professional development in an organisation, and enables its people prepared for various operations. Training is expected to bridge the performance gap. Training in ICT-based resources and services is very important because it helps in rendering value added services to the users. The library professionals were asked to indicate their training or orientation needs in ICT.

Table 11 shows that 54 (79 per cent) library professionals indicated the need for training in digital library and institutional repository software; 45 (66 per cent) on library management software; 34 (50 per cent) in evaluation of online information resources; 29 (43 per cent) in Internet tools and techniques; 26 (38 per cent) in search techniques and strategies, and use of online catalogue; and 22 (32 per cent) professionals in use of e-journals, e-books, databases and bibliographic resources. Majority of the Professionals Assistants (62 per cent), Junior Librarians (70 per cent) and Assistant Librarians (75 per cent) needed training in library management software. A large majority of the Professional Assistants (88 per cent) and majority of the Junior Librarians (60 per cent) and Assistant Librarians (69 per cent) needed training in digital library and institutional repository software. The data indicate that the existing ICT training and orientation provided by the Calicut University library are not fully sufficient to create ICT literacy among the library professionals. Majority of the professionals needed training or orientation in library management, digital library and institutional repository software.

6. CONCLUSION

The findings of the study show that the young Professional Assistants are more ICT literates than the Junior Librarians and Assistant Librarians. Though the library professionals claim that they use different ICT-based resources and services, the frequency of use of these resources and services was very low. The ICT literacy levels of the professionals were much influenced by the levels of ICT use in their libraries. The library professionals need to enhance their level of ICT literacy. The University should provide state-of-the-art ICT infrastructure including hardware, software and e-resources with full-fledged Internet access. The library professionals should be provided with more chances of formal training to introduce all possible ICT-based resources and services that can improve their ICT literacy.

The present library and information science curricula in universities in India are not supporting the appropriate skills and expertise to be able to handle the application of ICT. ICT literacy skills need to be integrated appropriately into the curricula to ensure improved ICT literacy.

Introduction of open-source software has great promise for universities in developing countries. Most universities in third world may find it difficult to take advantage of open-source initiative due to lack of skills. The university authorities need to look into this matter and should make efforts to enhance the ICT skills of their professionals. The Calicut University should take initiative to introduce open-source software for the design and development of automated library system, digital libraries, and institutional repositories. The library professionals should intensify their efforts to enhance the level of confidence in high-level ICT tasks.

Table 11. Training or orientation needs of library professionals

Training/orientation needs	Required by			
	Professional Assistants	Junior Librarians	Assistant Librarians	Total
Use of bibliographic resources	13 (31%)	2 (20%)	7 (44%)	22 (32%)
Use of online catalogue	12 (29%)	1 (10%)	10 (63%)	23 (34%)
Use of E-journals, E-books and databases	13 (31%)	3 (30%)	6 (38%)	22 (32%)
Internet tools and techniques	15 (36%)	3 (30%)	11 (69%)	29 (43%)
Search techniques and strategies	16 (38%)	3 (30%)	7 (44%)	26 (38%)
Library management software	26 (62%)	7 (70%)	12 (75%)	45 (66%)
Digital library and institutional repository software	37 (88%)	6 (60%)	11 (69%)	54 (79%)
Evaluation of online information resources	25 (60%)	3 (30%)	6 (38%)	34 (50%)

REFERENCES

1. Haneefa, K.M. Application of information and communication technologies in special libraries in Kerala (India). *Library Review*, 2007, **56**(7), 603-20.

2. Nath, Vikas. Heralding ICT-enabled knowledge societies: Way forward for the developing countries. KnowNet Initiative, London School of Economics, 2000.

3. Digital transformation: A framework for ICT literacy. A report of the international ICT Literacy Panel. Educational Testing Service, 2002. http://www.ets.org/Media/Tests/Information_and_Communication_Technology_Literacy/ictreport. pdf

4. Ramzan, M. Does level of knowledge impact librarians' attitude towards information technology (IT) applications? Roadmap to new generation of libraries using emerging technologies, edited by T.A.V. Murthy, *et al*. *In* Second International Convention on Automation of Libraries in Education and Research Institutions, 11-13 February 2004, New Delhi. Information and Library Network Centre (INFLIBNET), Ahmedabad, 2004. pp. 21-31.

5. Safahieh, Hajar & Asemi, Asefeh. Computer literacy skills of librarians: A case study of Isfahan University libraries, Iran. *The Electronic Library*, 2010, **28**(1), 89-99.

6. Choudhury, B.K. & Sethi, Bipin Bihari. Computer literacy of library professionals in the university libraries of Orissa: An analytical study. *IASLIC Bulletin*, 2009, **54**(1), 15-30.

7. Haneefa, K.M. Information and communication technology training in special libraries in Kerala. *In* Tenth National Convention on Knowledge, Library and Information Networking, 20-23 November 2007, New Delhi. Developing Library Network (DELNET), New Delhi, 2008. pp. 288-99.

8. Rekabdarkolaei, Saeid Moradi & Amuei, Fattaue. Evaluation of ICT literacy differences in trainee student teachers from the view of sexuality. *Campus-wide Inf. Syst.,* 2008, **25**(3), 176-88.

9. Korobili, Stella; Malliari, Aphrodite & Christodoulou, George. Information literacy paradigm in academic libraries in Greece and Cyprus. *Ref. Servay Rev.*, 2008, **36**(2), 180-93.

10. Adeyoyin, Samuel Olu. ICT literacy among the staff of West African university libraries: A comparative study of Anglophone and Francophone countries. *The Electronic Library*, 2006, **24**(5), 694-705.

11. Adomi, Esharenana E. & Anie, Silvester O. An assessment of computer literacy skills of professionals in Nigerian university libraries. *Lib. Hi Tech News*, 2006, **2**, 10-14.

12. Adeyoyin, Samuel Olu. Information and Communication Technology (ICT) literacy among the staff of Nigerian university libraries. *Library Review*, 2005, **54**(4), 257-66.

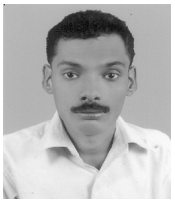
13. Okiy, R.B. Strengthening information provision in Nigerian university libraries through information communication technologies. *The Electronic Library*, 2005, **23**(3), 311-18.

14. Oliver, Ron & Towers, Stephen. Information and communication technology literacy—Getting serious about IT, 2000. http://elrond.scam.ecu.edu.au/olive r/2000/emict.pdf.

15. Chou, Chien; Tsai, Chin-Chung & Chan, Pei-Shan. Developing a web-based two-tier test for internet literacy. *British J. Edu. Technol.*, 2006, **38**(2), 369-72.

About the Authors

Dr Mohamed K. Haneefa is Assistant Professor in the Department of Library and Information Science, University of Calicut, Kerala. Prior to this, he worked at NIT Calicut, IISR Calicut, and T.K.M. College of Engineering Kollam. Dr Haneefa successfully completed the Library Automation project of the Indian Institute of Spices Research Library. He has published several research papers in professional journals and participated and presented papers in many national and international conferences. His current research interests are primarily focused on applications of innovative ICT to solve information access and retrieval problems, and tools used to facilitate formal and informal learning in online and face-to-face environments.



Shri C.K. Abdul Shukkoor is a MLIS student in the Department of Library and Information Science, University of Calicut, Kerala. His areas of interest include digital library, institutional repository, and information literacy.