

TECHNOLOGY AWARENESS AND USE OF ICT IN UNIVERSITY LIBRARIES: STRATEGIES FOR CAPACITY BUILDING

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Abstract

University library plays a dominating role in providing the services to the dignified users. This study is investigating the awareness/skill towards the Information and Communication Technology (ICT) among the university library professionals of Karnataka State. The study has used a questionnaire tool to assess the awareness and skills to handle different technologies, ICT based services, web tools and problems towards ICT applications. In addition, the paper suggests improving the knowledge and skills among the library professionals and strategies for capacity building.

Keywords: Library professionals, University library, Karnataka, ICT Skills, Capacity Building, Training and Awareness.

1.0 Introduction

The present digital environment is growing at a rapid rate as every person is connected to internet and information is at their finger tip. This has led a paradigm shift (i.e. from print to digital/electronic environment) of libraries making the library professionals to adopt the new trends in the libraries and ascertain their knowledge. However, the LIS professionals remain reluctant to gain new skills; they will become irrelevant to their organization and will probably lose out in competition for employment to people of other fields like scientists, engineers and IT professionals (Sarrafzadeh, 2005). Thus, LIS professionals must encounter rapidly changing environments that require diverse skills, new thinking and broader perspectives and must be prepared to develop innovative ideas for the capture, process and sharing of knowledge and demonstrate good management practices if they want to remain relevant in the emerging knowledge age (Smythe, 1999).

The university libraries in the present digital environment are provision of and effective resources for information needs of the students, research scholars and faculty members. Awareness of information about the ICT gadgets, applications, web tools and library softwares enables them to train and develop new skills to gain competencies which are required for the present electronic information age.

2.0 Objectives

The objectives of the present study are:

1. To study the level of awareness/skills of library professionals about various gadgets/technologies, ICT applications and services;
2. To examine the problems faced by library professionals in effective utilization of ICT applications; and
3. To suggest measures to improve the knowledge and skills of library professionals.

3.0 Methodology

The present study has adopted well-structured questionnaire tool to collect the information from the respondents. The questionnaire covers all the faces of the topic and is distributed among 101 library staff of

selected thirteen university libraries of Karnataka state. Out of which 88 duly filled in questionnaire were collected back and used as primary data for the present work.

3.1 Study Sample

There are three categories of staff identified in this study

1. Professional library staff: holds qualification of a Master Degree in Library and Information Science;
2. Para-professional staff: This category generally rose through the ranks, who hold diploma in the library science, they constitute the main body of library staff and cannot rise higher than some level in group B; and
3. Supporting Staff: The clerical, secretariat and security staff.

Only first two categories i.e. Professional librarians and Para professional are the main respondents of the study.

4.0 Scope and Limitations

The present study is restricted to the library staff of the universities of Karnataka viz. University of Mysore, Mysore (UM), Karnatak University, Dharwad (KUD), University of Agricultural Sciences, Bangalore (UASB), Bangalore University, Bangalore (BUB), Gulbarga University, Kalaburgi (GUK), Mangalore University, Mangalore (MUM), University of Agricultural Sciences, Dharwad (UASD), Kuvempu University, Shimogga (KUS), National Law School of India University, Bangalore (NLSIU), Kannada University, Hampi (KUH), Rajiv Gandhi Institute of Health Sciences University, Bangalore (RGIHSU), Karnatak State Open University, Mysore (KSOU), Visweshwaraya Technical University, Belagavi (VTU). These universities were established before 2000 and have adequate infrastructure and manpower to carry out the ICT awareness/skills among the LIS professionals.

5.0 Literature Review

The significance of Information and Communication technologies in the present digital environment is very high. Hence, the human resources need to have necessary skills to handle the ICT technology and to deliver the information in the desired format to the users. The literature shows the relevant studies carried out on the skill requirements in the digital environment. (Majhi, Meher & Maharana, 2015) shows that LIS professionals are quite interested to use Cloud computing in library operation and services. (Baro, Idioid and Godfrey, 2013) explains lack of facilities such as computers with internet access, lack of skills, and lack of time were indicated as some of the barriers in the use of web tools by librarians in university libraries. (Kennan, 2016) most common set of skills required were interpersonal skills, data specific knowledge and skills, broad understanding of data types, metadata, and legal and regulatory frameworks. Contextual knowledge of appropriate information technologies, training and advocacy skills were also highly sought.

7.0 Analysis and Interpretation of Data

Table 1: Distribution of Questionnaire

Total Distributed	No. of Respondents	Percentage
101	88	87.13

Out of **101** questionnaires distributed, **88** duly filled in questionnaires were received, thus the resulting into a response rate of **87.13%**. After collecting the data from the library professionals, the data is checked and analyzed accordingly for the study.

Table 2: Level of awareness/skill for the use of following technologies/gadgets

Table - 2 shows the awareness level for the following techniques gadgets. The responses are sought based on the survey instrument scale from 'Very Poor' (1) to 'Very Good' (5).

TECHNIQUES/GADGETS	VERY POOR	POOR	DON'T KNOW	GOOD	VERY GOOD
Computer networking	--	01 (01.14)	27 (30.68)	36 (40.91)	24 (27.27)
CD/DVD writing	02 (02.27)	02 (02.27)	17 (19.32)	50 (56.82)	16 (18.18)

Memory stick (flash drive, USB)	02 (02.27)	02 (02.27)	19 (21.59)	46 (52.27)	17 (19.32)
Mobile phone	--	--	15 (17.05)	50 (56.82)	23 (26.14)
Digital camera	--	01 (01.14)	20 (22.73)	54 (61.36)	13 (14.77)
Webcam	--	03 (03.41)	28 (31.82)	41 (46.59)	17 (19.32)
MP4 player (e.g. iPod)	01 (01.14)	06 (06.82)	33 (37.50)	38 (43.18)	11 (12.50)
Laser printer	01 (01.14)	06 (06.82)	29 (32.95)	43 (48.86)	09 (10.23)
LCD/multimedia projector	01 (01.14)	04 (04.55)	35 (39.77)	43 (48.86)	05 (05.68)
RFID Technology	--	--	--	--	--
Barcode scanner	--	02 (02.27)	27 (30.68)	46 (52.27)	13 (14.77)
Image scanner	--	03 (03.41)	19 (21.59)	56 (63.64)	10 (11.36)
E-book reader	--	03 (03.41)	28 (31.82)	48 (54.55)	08 (09.09)
Internet (leased line, Dial up, Broadband)	--	02 (02.27)	20 (22.73)	43 (48.86)	23 (26.14)
Wireless internet	--	03 (03.41)	23 (26.14)	41 (46.59)	20 (22.73)

Figures in parenthesis indicate percentage (Note: Multiple choices were permitted)

Table - 2 indicates that as per the combined scores of 'good' and 'Very Good', 82.96% respondents have the awareness of Mobile phone gadgets, 76.13% respondents are aware of Digital camera, followed by 75.00% respondents have the awareness of CD/DVD writing, image scanner, internet (leased line, dial up broadband), 71.59% respondents are aware of memory stick (flash drive, USB), 69.32% respondents are aware of wireless internet, 68.18% respondents have the awareness of computer networking, 67.04% are aware of barcode scanner, 65.91% are aware of webcam and 63.64% are having the awareness of e-book reader. Although 'Laser printer', MP4 player (e.g. iPod) and 'LCD/multimedia projector' appear to be low in the order as specified by the respondents towards the awareness of these gadgets, yet a considerably high number of 'good' responses have been given to them (59.09%, 55.68% and 54.54% respectively).

It can be clearly seen from the above discussion that almost all the participants have 'good' awareness about all the technologies/gadgets mentioned in the table above, whereas 'RFID Technology' has no response as the technology has not been introduced at the university level.

Table 3: Level of awareness/skill for the following applications/services

Table - 3 shows the level of awareness/skill for the following applications/services. The responses are sought based on the survey instrument scale from 'Very Poor' (1) to 'Very Good' (5).

APPLICATIONS/SERVICES	VERY POOR	POOR	DON'T KNOW	GOOD	VERY GOOD
Windows Operating system	--	01 (01.14)	15 (17.05)	49 (55.68)	23 (26.14)
Linux Operating System	08 (09.09)	19 (21.59)	30 (34.09)	27 (30.68)	04 (04.55)
Electronic Resources Management System	--	01 (01.14)	34 (38.64)	43 (48.86)	10 (11.36)
Web page Designing and Hosting	02 (02.27)	18 (20.45)	31 (35.23)	33 (37.50)	04 (04.55)
Creating metadata/tag	01 (01.14)	22 (25.00)	31 (35.23)	31 (35.23)	03 (04.55)

Creating HTML/XML document	06 (06.82)	17 (19.32)	28 (31.82)	34 (38.23)	02 (03.41)
Installation and customization of software(s)	07 (07.95)	13 (14.77)	31 (35.23)	36 (38.64)	01 (01.14)
System administration and maintenance	08 (09.09)	18 (20.45)	34 (38.64)	24 (27.27)	05 (05.68)
Programming languages	10 (11.36)	21 (23.86)	27 (30.68)	27 (30.68)	03 (03.41)
Development of institutional Repository	13 (14.770)	13 (14.77)	25 (28.41)	31 (35.23)	06 (06.82)

Figures in parenthesis indicate percentage (Note: Multiple choices were permitted)

Table - 3 indicates that as per the combined scores of ‘good’ and ‘Very Good’, 81.82% of the respondents are having awareness towards Windows Operating System, 60.22% respondents are aware of Electronic resources management, followed by 42.05% are having awareness towards web page designing and hosting and development of institutional repository, creating HTML/XML document, 39.78% respondents have the awareness towards Installation and customization of software(s) and Creating metadata tag. Although Linux operating system, Programming languages and System administration and maintenance appear to be low in the order as specified by the respondents for the awareness towards of these applications/services, yet a considerably high number of ‘good’ responses have been given to them (35.23%, 34.09% and 32.95% respectively).

Hence, from the above Table indicates that Windows operating system and Electronic resources management system are the well-known applications are rated as ‘good’ or ‘Very Good’ upon the responses of the participants, whereas Linux operating system, Programming languages and System administration and maintenance are rated as ‘poorer’ in handling the applications/services or the respondents are unaware of them and also majority of respondents 'don't know' about the applications/services like electronic resources management, system administration and maintenance.

Table 4: Level of awareness for the following web tools/services

Table - 4 shows the level of awareness for the following web tools/services. The responses are sought based on the survey instrument scale from 'Very Poor' (1) to 'Very Good' (5).

WEB TOOLS/SERVICES	VERY POOR	POOR	DON'T KNOW	GOOD	VERY GOOD
Blogging (e.g. Twitter, weblogs)	02 (02.27)	07 (07.95)	30 (34.09)	41 (46.59)	08 (09.09)
Audio/video sharing/webcasting (e.g. Flickr, Skype, YouTube)	--	03 (03.41)	30 (34.09)	46 (52.27)	09 (10.23)
Email/Instant messaging/chat	--	01 (01.14)	20 (22.73)	47 (53.41)	20 (22.73)
Discussion groups (e.g. Google/Yahoo! Groups)	--	08 (09.09)	33 (37.50)	36 (40.91)	10 (11.36)
Listservs (e.g. LISforum, Nimlis)	--	08 (09.09)	34 (38.64)	37 (42.05)	10 (11.36)
RSS feeds	03 (03.41)	08 (09.09)	52 (59.09)	17 (19.32)	07 (07.95)
Wikis (e.g. Wikipedia, LISWiki)	--	06 (06.82)	03 (03.41)	41 (46.59)	06 (06.82)
Social book marking/aggregating e.g. Delicious, FriendFeed)	04 (04.55)	17 (19.32)	33 (37.50)	29 (32.95)	05 (05.68)
Social networking (e.g. Google+, Facebook)	01 (01.14)	03 (03.41)	22 (25.00)	51 (57.95)	12 (13.64)
Content management systems (e.g. Drupal, Joomla)	01 (01.14)	16 (18.18)	38 (43.18)	29 (32.95)	04 (04.55)

Figures in parenthesis indicate percentage (Note: Multiple choices were permitted)

Table - 4 indicate that as per the combined scores of ‘good’ and ‘Very Good’, the awareness towards Email/Instant messaging/chat **76.14%** and ranked to be the foremost. Social networking is ranked next in the web tools/services awareness with **71.59%** respondents, followed by Audio/video sharing/webcasting **62.50%**, Blogging **55.68%**, Listservs and Wikis are ranked equally with **53.17% each** by the respondents and **52.27%** of the respondents are having awareness towards discussion groups in the web tools/services. Although Social book marking/aggregating, content management systems and RSS feeds appeared lowest in the order as specified by the participants for the awareness towards these web tools/services, yet a considerably high number of ‘good’ responses have been given to them (**38.10%**, **37.30%** and **27.78%** respectively).

It can be noted from the above **Table** that the web tools only restricted as email/instant messaging/chat, social networking and audio/video sharing/webcasting and blogging among the library personnel of the university libraries. Further, the table shows that majority of the respondents are unaware of RSS feeds, social book marking/aggregating and content management systems.

Table 5: Level of awareness for the following library software and digital library software

Table - 5 shows the level of awareness for the following library software and digital library software. The responses are sought based on the survey instrument scale from 'Very Poor' (1) to 'Very Good' (5).

LIBRARY SOFTWARE	VERY POOR	POOR	DON'T KNOW	GOOD	VERY GOOD
LIBSYS	--	01 (01.14)	22 (25.00)	42 (47.73)	24 (27.27)
SOUL	--	--	--	59 (67.05)	29 (32.95)
LIBSOFT	01 (01.14)	03 (03.41)	28 (31.82)	55 (62.50)	01 (01.14)
Alice for windows	--	04 (04.55)	42 (47.73)	27 (30.68)	15 (17.05)
CDS/ISIS	--	01 (01.14)	01 (01.14)	49 (55.68)	37 (42.05)
WINISIS	--	41 (46.59)	01 (01.14)	47 (53.41)	40 (45.45)
NEWGENLIB	01 (01.14)	04 (04.55)	30 (34.09)	45 (51.14)	08 (09.09)
Koha	--	--	01 (01.14)	20 (22.73)	66 (75.00)
Evergreen	01 (01.14)	10 (11.36)	39 (44.32)	36 (40.91)	01 (01.14)
php my library	02 (02.27)	47 (53.41)	39 (44.32)	--	--
Mandarin	11 (12.50)	50 (56.82)	27 (30.68)	--	--
OPENBIBLIO	25 (28.41)	41 (46.59)	22 (25.00)	--	--
DIGITAL LIBRARY SOFTWARE					
Greenstone	--	--	01 (01.14)	50 (56.82)	37 (42.05)
Dspace	--	--	12 (13.64)	25 (28.41)	51 (57.95)
E-prints	01 (01.14)	40 (45.45)	28 (31.82)	20 (22.73)	--
Fedora	37 (42.05)	22 (25.00)	29 (32.95)	--	--

Figures in parenthesis indicate percentage (Note: Multiple choices were permitted)

Table – 5 indicates that as per the combined scores of ‘Good’ and ‘Very Good’, the awareness of respondents **100.00%** towards library software SOUL is ranked to be the foremost by the library personnel. WINISIS is

ranked next in the library software awareness with **98.86%** respondents, followed by Koha and CDS/ISIS **97.73%** respondents, LIBSYS **75.00%**, LIBSOFT **63.64%**, NewGeLib **60.23%**, Alice for Window' **47.73%** and Evergreen **42.05%**. Although php my library, Mandarin and Openbiblio library softwares had no responses from the respondents because most of the respondents haven't experienced working under these softwares at the university level.

In addition to the library softwares the table also highlights the awareness of the digital library softwares with the combined scores of 'good' and 'Very Good', which shows that the awareness digital library software Greenstone is ranked the foremost with **98.87%**, followed by Dspace **86.36%** and E prints **22.73%** respondents are aware and can handle these digital library softwares. However, no response has come from the respondents on the awareness of the 'Fedora' digital library software.

It can be clearly seen from the above discussion that almost all the participants have 'good' awareness about all the library softwares and digital library softwares mentioned in the table above, whereas 'SOUL' has no response in 'Don't know' rating which means that the library software is known by all the participants. In addition, to the above most of the respondents are unaware of the library softwares like Openbiblio, Mandrin and php my library.

Table 6: Problems faced by library professionals in the use of ICT application

There are some problems faced in handling the ICT applications. **Table – 6** reveals the different problems faced by library professionals.

PROBLEMS	MALE	FEMALE	TOTAL
Inadequate training in ICT applications	39 (79.59)	32 (82.05)	71 (80.68)
Lack of infrastructure	38 (77.55)	34 (87.18)	72 (81.82)
No support from administration in library professionals	31 (63.27)	29 (74.36)	60 (68.18)
Lack of support from authorities for implementing ICT applications in library	31 (63.27)	30 (76.92)	61 (69.32)
Lack of co-ordination among library staff	26 (53.06)	22 (56.41)	48 (54.55)
No initiative from professional associations to conduct specialized training programmes	27 (55.10)	28 (71.79)	55 (62.50)
Lack of scope for library professionals due to ICT applications	23 (46.94)	20 (51.28)	43 (48.86)
Lack of interest on the part of users	24 (48.98)	25 (64.10)	49 (55.68)
Fears of ICT applications	24 (48.98)	20 (51.28)	44 (50.00)

Figures in parenthesis indicate percentage (Note: Multiple choices were permitted)

Table - 6 shows that majority of the respondents i.e. **81.82%** incline to the problem that university libraries have lack of infrastructure, **80.68%** respondents rely on Inadequate training in ICT applications, **69.32%** respondents have faced Lack of support from authorities for implementing ICT applications, **68.18%** respondents have faced no support from administration in library professionals, **62.50%** respondents blame that no initiative from professional association to conduct specialized training programmes, **55.68%** respondents faced Lack of interest on the part of users, **54.55%** respondents have faced lack of co-ordination among the library staff. In addition, **50.00%** of the respondents face Fears of ICT applications and **48.86%** respondents face lack of scope for library professionals due to ICT applications.

Table 7: Suggestions for updating the knowledge/skills of library professionals

Table - 7 highlights the opinions of the library professionals for updating their knowledge/skills.

SUGGESTIONS	MALE	FEMALE	TOTAL
Regular attendance of relevant conference/workshops	40 (81.63)	30 (76.92)	70 (79.55)
In-house training programmes	39 (79.59)	31 (79.49)	70 (79.55)
Going for higher studies/formal courses	34 (69.39)	25 (64.10)	59 (67.05)
Undertaking individual research work/publication	36 (73.47)	29 (74.36)	65 (73.86)
Discussion of professional matters with colleagues	31 (63.27)	29 (74.36)	60 (68.18)
Attending professional association meetings	33 (67.35)	31 (79.49)	64 (72.73)
Involvement in teaching	28 (57.14)	27 (69.23)	55 (62.50)
Reading general books/literary works	33 (67.35)	27 (69.23)	60 (68.18)
Regularly reading relevant professional literature	34 (69.39)	31 (79.49)	65 (73.86)
Searching Internet for relevant professional information	39 (79.59)	31 (79.49)	70 (79.55)
Learning from web sources	35 (71.43)	33 (84.62)	68 (77.27)

Figures in parenthesis indicate percentage (Note: Multiple choices were permitted)

However, with implications of the ICT applications into the university libraries it becomes essential to ascertain the knowledge/skills of the library professionals. Hence, the opinions of the library professionals are presented in the Table - 7. It shows that 79.55% of the respondents agree on Regular attendance of relevant conference/workshops, in house training programmes and searching internet for relevant professionals information suggestions to update their knowledge/skills, while 77.27% respondents rely on the suggestion that learning from web sources is one of the way to improve their knowledge/skills, 73.86% respondents trust on undertaking individual research work/publication and regularly reading relevant professional literature suggestions, followed by 72.73% respondents follow the suggestion of attending professional association meetings, 68.18% respondents follow discussion of professional matters with colleagues and reading general books/literary works. However, 67.05% respondents follow the suggestions on going for higher studies/formal courses and 62.05% respondents follow involvement in teaching suggestion.

7.0 Findings

The analysis of the study shows that majority of the library staffs know about the skills but they don't know how to handle ICT tools. The above results explain why many of the library professionals are not directly related with ICT based applications/services. Thus, the library professionals are partly skilled in various technologies and applications, but in case of web tools/services the awareness level was very low. Though, the library professionals are having a positive attitude towards the ICT applications, the university libraries have minimum basic infrastructure facilities and the training programmes conducted at the university level doesn't concentrated on the needs of individuals.

7.1 Strategies for capacity building are

- ✓ Conducting of ICT awareness and sensitization: the library professionals know about the technology but never felt the need for such awareness.
- ✓ In contrast, library professionals believe that the web tools only restricted as email/instant messaging/chat, social networking and audio/video sharing/webcasting and blogging among the personnel of the university libraries.

- ✓ Lack of time for personal training is also perceived as a problem as they can use ICT yet the areas of their weakness or new cannot be identified.
- ✓ This means library professionals do not get an opportunity to support because they do not know truly which post training area they are weak.
- ✓ Availability of trained staff for training: the staff is not available for instructions and general training is perceived by library staff as a major drawback. The need for a trained and skilled staff felt the most among the library staff.

8.0 Suggestions and Conclusion

The university libraries are required to conduct costumed training more frequently at different location so as to enable librarians to attend the programme. However, user perception, management perception and branding of the library becomes the motivating factor to conduct highly customized training like entry level, supervision level, middle management level and management level. Since, there is very less provision in curriculum on ICT skills, the restructuring of the library science curriculum and incorporate significant changes is the need of the hour.

However, human resources are very essential in the university library and they play a dominating role in providing the services to the dignified users of the respective universities. Alerting or making aware of ICT technology among the human resources capacity building (training) is required to improve the skills. But, Capacity Building is much more than training and includes the following

- ✓ Human resource development, the process of equipping individuals with the understanding, skills and access to information, knowledge and training that enables them to perform effectively.
- ✓ Organizational development, the elaboration of management structures, processes and procedures, not only within organizations but also the management of relationships between the different organizations and sectors (public, private and community).
- ✓ Institutional and legal framework development, making legal and regulatory changes to enable organizations, institutions and agencies at all levels and in all sectors to enhance their capacities. (Urban Capacity Building Network)

Thus, the capacity building enriches the existing skills among the library professionals and helps them to adopt the new skills and makes them aware of the new ICT tools, technology and techniques.

9.0 References

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