

EMERGING INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) SKILLS AMONG THE FACULTY MEMBERS IN PHARMACY COLLEGES IN KARNATAKA (South India): A STUDY

Dr. B. Mahadevan, Dr. K. Vijayakumar.

UGC Post-Doctoral Fellow, Associate Professor

Department of library & information Science, Annamalai university, Annamalai Nagar, Tamilnadu, India.

ABSTRACT - Library and information centre are of perennial importance to professional education institutions through all ages. Success of any library system depends on its workforce. Skills and abilities of library professionals plays vital role in serving their users to make them successful in their academic endeavors. Emerging technology Skills among the faculty members Pharmacy College of Karnataka are analyzed to find the status of their skills and to make further recommendations. It is found that library professionals are having better skills in handling emerging technologies. Recommendations are made to improve skills further through various suggested ways.

Keywords: Emerging Technology, Skills, Competencies, Libraries, faculty members pharmacy Colleges, Analysis, Knowledge.

INTRODUCTION

A library plays an important role in the academic institution providing access to world-class information resources and services and stimulates academic research in the country. Hence, the success of any educational institution depends upon its library, as library services are fundamental, which affect the whole educational system. National Knowledge Commission report mentions that libraries play a pivotal role in the dissemination of knowledge. They are an extremely important element of the foundation of a knowledge economy. Higher educational libraries are experiencing a massive change in the way they function (National Knowledge Commission Report, 2006-2009). University libraries being part of higher education are no exception. University libraries support learning, teaching, research and other educational functions appropriate to their parent institutions. The special collections cater to the needs, not only for teaching and learning but also for research, publication, conservation of ideas and knowledge. The new technologies especially electronic technologies have contributed to the radical changes in LIS and practice.

Information and Communication Technology (ICT) have changed the library and information services globally. Digital media has revolutionized the information society and advances in ICT have dramatically changed the information provisions. The internet has provided universal access to information. Technological innovation has changed the rate of conversion of knowledge, information, and data into electronic or digital format. Development in the software has generated powerful knowledge management software which has transformed the way; knowledge is organized, stored, accessed and retrieved. The digital revolution driven by ICT's innovation has transformed University libraries fundamentally. It has impacted on every sphere of pharmacy college library activity. The pharmacy college libraries traditional role of information custodian has been reduced to that of being one of many information providers.

CONCEPT AND MEANING OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

Information and Communication Technologies (ICTs) are often associated with the most sophisticated and expensive computer-based technologies. ICTs are basically information-handling tools- a varied set of goods, applications and services that are used to produce, store, process, distribute and exchange information. ICT-Information and Communication Technology is a varied collection technological gear and resources which are made use of to communicate. They make use of to generate, distribute, collect & administer information. According to Anyakoha (1991), information technology is “the use of manmade tools for the collection, generation, communication, recording, re-management and exploitation of information. It includes those applications and commodities, by which information is transferred, recorded, edited, stored, manipulated or disseminated”. ICT is a mean that has changed many aspects of the way we live. Hawkrigde (1983) describes information technology as a revolution which has penetrated almost all fields of human activity, thus transforming economic and social life.

REVIEW OF LITERATURE

International Federation of Library Associations and Institutions (2016) reported the results of study undertaken by it since 2013. In 2013 IFLA identified 5 important trends and future of libraries. They hold discussion and conducted case studies on the identified trends at various countries world over and confirmed the results of discussions. Some of the highlights of the trends reported are Libraries need to adapt new and innovative procedures and services based on user preferences, trust, neutrality, free and equal access to information, and freedom of expression are key features of the library services are increasingly digitalized and remotely accessed Librarians need to indulge in continuous learning and continuous up-gradation of skills and embrace new Coordinated and collaborative working environment. Innovative and maker spaces should be part of present libraries Letnikova and Xu (2017).

OBJECTIVES OF THE STUDY

1. To identify important emerging technologies applicable for pharmacy libraries at present.
2. To identify the set skills required for library professionals to handle identified emerging technologies.
3. To analyze the level of emerging technologies skills possessed by library professionals of faculty members pharmacy College Libraries in Karnataka.
4. To compare level of skills among different designations of library professionals
5. To draw recommendations for improving emerging technologies skills of library professionals.

METHODOLOGY

In order to collect the comprehensive and relevant data from the faculty members of 30 pharmacy colleges in Karnataka, a structural questionnaire method and interview method was adopted as the tool for

collection of data. The questionnaire was formulated keeping in view, the objective and various forcers of the study and data was collected personally, 400 questionnaire were distributed to the pharmacy faculty, out of that 350 were received back, The remaining 50 were either not received nor incomplete. The overall response rate is 87.5%.The data collected through the questionnaires and it was analyzed with average, simple percentages, T-Test, TWO WAY ANOVA models is worked out with the excel package.

DATA COLLECTION

The researcher employed a well structured questionnaire for collecting the data from the respondents. The researcher sent questionnaires to the pharmacy faculty members of the concerned 30 pharmacy colleges in Karnataka. The questionnaire was prepared in such a way that the respondents could easily understand and simply indicate the answers that they wished to respond from among multiple answers.

LIMITATIONS

The findings of this study are mainly applicable to pharmacy colleges faculty members in Karnataka and not applicable to other college faculty members, Only 30 institutions are selected for this study since studying of all institutions would be not possible for an individual researcher, owing to constraints of money, time, energy and efforts.

ANALYSIS AND INTERPRETATION OF DATA

Table - 1
Gender wise Respondents

S. No.	Gender	Respondents	Percentage
1.	Male	210	59.46
2.	Female	140	40.54
	Total	350	100.00

Table – 1 indicates the Gender wise distribution of respondents. Among the 350 respondents surveyed, 210 (59.46%) are male and 140 (40.54%) are Female. It can be observed the at male faculty members dominates the study.

Table – 2

Designation wise Respondents

S. No.	Designation wise	Respondents	Percentage
1.	Assistant Professor	169	48.29%
2.	Associate Professor	81	23.15%
3.	Professor	100	28.58%
	Total	350	100.00%

Table – 2 indicates the designation wise distribution of Respondents. 350 Respondents surveyed. Among them 169 (48.29%) are Assistant Professors, 100 (28.58%) Respondents are Professors and about 81 (23.15%) Respondents are Associate Professors. It can be observed that Assistant Professors in Pharmacy colleges dominates the study.

Table-3 Awareness of ICT Based Application

Technology	Extremely Poor	Below average	Average	Above average	Excellent	Total
Operating system windows	22(6.28%)	35(10.0%)	65(18.57%)	103(29.42%)	125(35.71%)	350(100%)
Ms Office package	20(5.71%)	62(17.71%)	50(14.28%)	91(26.0%)	127(36.28%)	350(100%)
Operating system Linux	28(8.0%)	45(12.85%)	65(18.57%)	75(21.42%)	138(39.42%)	350(100%)
Web pages Design	28(8.0%)	45(12.85%)	77(22.0%)	70(20.0%)	130(37.14%)	350(100%)
Create Metadata/tag	35(10.0%)	38(10.85%)	47(13.42%)	90(25.71%)	140(40.0%)	350(100%)
Installation and customization software	18(5.14%)	40(11.42%)	150(42.85%)	85(24.28%)	57(16.28%)	350(100%)
RFID technology	22(6.28%)	30(8.57%)	120(34.28%)	65(18.57%)	113(32.28%)	350(100%)
Barcode Technology	15(4.28%)	25(7.14%)	125(35.71%)	45(12.85%)	140(40.0%)	350(100%)
Data Base Management System	20(5.71%)	20(5.71%)	105(30.0%)	55(15.71%)	150(42.87%)	350(100%)
Photoshop	18(5.14%)	20(5.71%)	60(17.14%)	107(30.57%)	145(41.42%)	350(100%)

Awareness of ICT based application, Table-2 presents the respondents level of Knowledge in ICT based application. From the table it is found that the respondents relatively possess a higher level of awareness in using data base Management system are 150 (42.87%) Photoshop in 145 (41.42%) and 140(40.0%).Create Metadata/ tag & Barcode Technology.

Table 3: Before Average and After Average (Paired T-Test)

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Before Average	36.0000	10	13.02988	4.12041
	After Average	78.6000	10	20.23309	6.39826

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Before Average - After Average	-4.26000E1	21.05654	6.65866	-57.66294	-27.53706	-6.398	9	.000

Table 3: ANOVA

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Before Average	Between Groups	1478.000	8	184.750	3.695	.383
	Within Groups	50.000	1	50.000		
	Total	1528.000	9			
After Average	Between Groups	3292.400	8	411.550	1.050	.642
	Within Groups	392.000	1	392.000		
	Total	3684.400	9			
Extremely Poor	Between Groups	308.400	8	38.550	2.142	.486
	Within Groups	18.000	1	18.000		
	Total	326.400	9			
Excellent	Between Groups	6334.000	8	791.750	9.370	.248
	Within Groups	84.500	1	84.500		
	Total	6418.500	9			

Table-4 Awareness of Pharmacy Automation Database

Data base	Awareness	%	Not Aware	%	Total
PUBMED	328	93.71%	22	6.28%	350(100%)
SCIENCE DIRECT	325	92.85%	25	7.14%	350(100%)
MEDLINE	321	91.71%	29	8.28%	350(100%)
NLM	317	90.57%	33	9.42%	350(100%)
BIO-PHRMA	315	90.00%	35	10.0%	350(100%)
APIDATA	302	86.28%	48	13.71%	350(100%)
IPN	298	85.14%	52	14.85%	350(100%)
OCLN	292	83.42%	58	16.57%	350(100%)
MLN	285	81.42%	65	18.57%	350(100%)
INPLN	278	79.42%	72	20.57%	350(100%)
TOXLINE	270	77.14%	80	22.85%	350(100%)
HSDS	258	73.71%	92	26.28%	350(100%)
INLN	241	68.85%	109	31.14%	350(100%)
MESH	225	64.28%	125	35.71%	350(100%)
UMLS	212	60.57%	138	39.42%	350(100%)
LACTMED	190	54.28%	160	45.71%	350(100%)

Table-4 shows the awareness of pharmacy automation database among the faculty members to familiar more with Pub Med (93.71%), followed by Science Direct (92.85%), Medline (91.71 %), NLM (90.57 %), Bio-Pharma (90.0 %) API Data (86.28 %), IPN (85.14%), OCLN (83.42 %), MLN (81.42 %), INPLN (79.42 %), TOX LINE (77.14%) HSDS (73.71 %). The professional expressed their skills as poor in the Data base such as INLN (68.85 %), MESH (64.28%), UMLS (60.57 %) and LACTMED (54.28%).

Table 4: Awareness of Pharmacy Automation Database

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Before Average	24.7778	9	4.79004	1.59668
	After Average	1.0178E2	9	14.53253	4.84418

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Before Average - After Average	-7.70000E1	14.24781	4.74927	-87.95183	-66.04817	-16.213	8	.000

Table-5 Skills for managing ICT based library services

Technology	Extremely Poor	Below average	Average	Above average	Excellent	Total
Electronic document delivery system	18 (5.14%)	20 (5.71%)	72 (20.57%)	105 (30.0%)	135 (38.57%)	350 (100.0%)
Online indexing and abstracting services	22 (6.28%)	20 (5.71%)	48 (13.71%)	110 (31.42%)	150 (42.85%)	350 (100.0%)
Digital reference services	26 (7.42%)	24 (6.85%)	73 (20.85%)	100 (28.57%)	127 (36.28%)	350 (100.0%)
Inter library loan through networking	25 (7.14%)	32 (9.14%)	75 (21.42%)	100 (28.57%)	118 (33.71%)	350 (100.0%)
Online bibliographic services	20 (5.71%)	30 (8.57%)	60 (17.14%)	100 (28.57%)	140 (40.0%)	350 (100.0%)
Development of institutional repository	22 (6.28%)	30 (8.57%)	70 (20.0%)	108 (30.85%)	120 (34.25%)	350 (100.0%)
CAS	17 (4.87%)	25 (7.14%)	65 (18.57%)	125 (35.71%)	118 (33.71%)	350 (100.0%)
SDI Services	30 (8.57%)	20 (5.71%)	80 (22.85%)	70 (20.0%)	150 (42.85%)	350 (100.0%)
Circulation of new additional list	25 (7.14%)	22 (6.28%)	85 (24.28%)	98 (28.0%)	120 (34.28%)	350 (100.0%)

Table-5 gives the result of analysis of faculty members' skills for managing various ICT related library services. A consistent 105(30.0%) of professionals has above average skills only for electronic document delivery system. Below average skills are shown for inter library loan though net making 45 (15.10 %), online indexing and abstracting services and development of institutional repository 108(30.85%), respondents also have a significant average level of skills in electronic document

delivery system 135(38.57%),current arrangement services 118(33.71%), online indexing and abstracting services and development of institutional repository 150(42.85%) etc.

Table-5 Skills for managing ICT based library services

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Before Average	25.1250	8	4.99821	1.76714
	After Average	1.0225E2	8	15.46193	5.46662

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Before Average - After Average	-7.71250E1	15.22627	5.38330	-89.85448	-64.39552	-14.327	7	.000

Table 5: Skills for managing ICT based library services

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Before Average	Between Groups	183.556	8	22.944		
	Within Groups	.000	0			
	Total	183.556	8			
After Average	Between Groups	1689.556	8	211.194		
	Within Groups	.000	0			
	Total	1689.556	8			
Extremely Poor	Between Groups	137.556	8	17.194		
	Within Groups	.000	0			
	Total	137.556	8			
Excellent	Between Groups	1414.889	8	176.861		
	Within Groups	.000	0			
	Total	1414.889	8			

Table-6 Skills for managing Electronic resources

Technology	Extremely Poor	Below average	Average	Above average	Excellent	Total
Use of OPAC/ web OPAC	17(4.87%)	35(10.0%)	120(34.28%)	70(20.0%)	108(30.85%)	350(100%)
Library Website	25(7.14%)	25(7.14%)	118(33.71%)	82(23.42%)	100(28.57%)	350(100%)
E-Book	11(3.14%)	18(5.14%)	105(30.0%)	110(31.42%)	106(30.28%)	350(100%)
Online-Journals	18(5.14%)	15(4.28%)	129(36.85%)	54(15.42%)	134(38.28%)	350(100%)
Online Database	15(4.28%)	20(5.71%)	90(25.71%)	104(29.71%)	121(34.57%)	350(100%)
Digital Archives/Subject gateways	12(3.42%)	18(5.14%)	80(22.57%)	122(34.85%)	118(33.71%)	350(100%)
Open Access Journals	16(4.57%)	19(5.42%)	80(22.34%)	90(25.71%)	145(41.42%)	350(100%)
Library Networks	16(4.57%)	16(4.57%)	88(25.14%)	106(30.28%)	124(35.42%)	350(100%)

Table-6 presents the Respondent's skill of Managing e-resources. From the table it is evident that the respondents possess a higher level of skills in the use of e-resources the analysis of data shows that the faculty members usage of Open Access Journal (41.42%), Online Journals (38.28%), Library Networks (35.42%) Online Database (34.57 %) and use of OPAC/Web OPAC- (30.85 %) the faculty members have average skills in use of almost all the e-resources.

Table 6: Skills for managing electronic resources

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Before Average	Between Groups	295.000	6	49.167	98.333	.077
	Within Groups	.500	1	.500		
	Total	295.500	7			
After Average	Between Groups	3083.500	6	513.917	1.004	.643
	Within Groups	512.000	1	512.000		
	Total	3595.500	7			
Extremely Poor	Between Groups	119.500	6	19.917	2.490	.450
	Within Groups	8.000	1	8.000		
	Total	127.500	7			
Excellent	Between Groups	1215.500	6	202.583	.556	.772
	Within Groups	364.500	1	364.500		
	Total	1580.000	7			

CONCLUSION

Present volatile technology world is threshold for numerous technologies, intensely influencing libraries and their users. It is not an exaggeration to say basic framework of library system is altered by technologies. Modified library system and tech-cultured users prompted library professionals to upgrade their skills and competencies and become bridge between new library resources, services and users. It is concluded from the study that library professionals working in Pharmacy College in Karnataka are having better skills to handle emerging technologies. They are also well off in terms of educational qualification. Library staff should be proactive in learning new skills to handle technologies emerging from time to time. Libraries have to make use of their workforce by motivating and preparing them to handle present and future technologies.

REFERENCES

1. Abram, S., Ave, P., & Mp T.,(2007) Preparing for the 2 . 0 World. Conf. Proc. ASP Conf. Ser., 377, 161–167,.
2. Arora J., (2009). Library 2.0 : Innovative Technologies for Building Libraries of Tomorrow. Open Access to Textual and Multimedia Content: Bridging the Digital Divide, 49–65,.
3. Scale M. E., (2009). Cloud computing and collaboration. Libr. Hi Tech News, 26(9),10–13.
4. Cervone. H. F., (2010). Emerging technology, innovation, and the digital library. OCLC Syst. Serv. Int. Digit. Libr. Perspect., 26(4), 239–242.
5. Salgar S. M.. (2004). Emerging Technology: Road Map to New Generation of Libraries Using Emerging Technology” proceedings of Second International CALIBER held on February 11-13, T .A. V. Murthy; editor, 351-57, New Delhi,. ISBN 81- 900825-8-2.
6. Lippincott J. K., (2010). A mobile future for academic libraries. Ref. Serv. Rev., 38(2), 205–213.

7. Anbu, K., & S. Kataria., (2015). Access to Library Resources through Portable Devices A pre-design Prototype for Creating Library Websites. Proc. 4th IEEE Int. Symp. Emerg. Trends Technol. Libr. Inf. Serv., pp. 1–5.
8. Sandhu, G., (2015). Re-Envisioning Library and Information Services in the wake of Emerging Trends and Technologies. Proc. 2015 4th Int. Symp. Emerg. Trends Technol. Libr. Inf. Serv., 153–160.
9. Hayman, R., & Smith E. E. (2015). Sustainable decision making for emerging educational technologies in libraries. Ref. Serv. Rev.,43(1), 7–18.
10. Sethi. R., (2015). Emerging Technique in Libraries : Cloud Computing. Proc. 4th Int. Symp. Emerg. Trends Technol. Libr. Inf. Serv., 2–4.
11. Johnson, E. D. M., (2016). The Right Place at the Right Time : Creative Spaces in Libraries. The Future of Library Space: Advances in Library Administration and Organization, 36(1), 351.
12. International Federation of Library Associations and Institutions (IFLA)(2016). IFLA Trend Report, 34.
13. Letnikova G. and Xu., N. (2017). Academic library innovation through 3D printing services. Libr. Manag., 38(4/5),208–218,.
14. Mazumdar N. R., (2007). Skills for Library and Information Professionals Working in Borderless Library. Proc. 5th Conv. Plan. 2007, Gauhati Univ. held on December 7-8, Guwahati, 421–429.
15. American Library Association (ALA). (2009). Core Competences of Librarianship. 1–5.
16. Canadian Association of Research Libraries (CARL). (2010), Core Competencies for 21st Century CARL librarians.10.
17. Corral, S., (2010). Educating the academic librarian as a blended professional: A review and case study. Libr. Manag., 31(8/9),567– 593.
18. Hui-fang, Q., (2010). The Discussion about the Best Structural Model of Knowledge-based Librarians under Network Environment. Proceedings of 2010 IEEE International Conference on Networking and Digital Society, 640–643.
19. Partridge J. M., Helen M., and Menzies L., (2010). Victoria and Lee and Carrie. The contemporary librarian : skills, knowledge and attributes required in a world of emerging technologies. Libr. Inf. Sci. Res., 32(4),265–271.
20. Sharma, P. L., (2011). Changing role of librarians in digital library era and need of professional skills, efficiency & competency. Indian Streams Reserach J., 1(Xii), 1–4.
21. Tzoc, E., & Millard, J., (2011), Technical skills for new digital librarians. Libr. Hi Tech News, 28(8), 11–15.
22. Satpathy, S. K., (2011). ICT Skills of LIS Professionals in Engineering Institutions of Orissa, India : A Case Study. Libr. Philos. Pract., 627.
23. Arokyamary J. R., & Ramasesh C.P., (2011). Emerging Trends and Technologies : Impact of Information Communication Technologies (ICTs) On Libraries and LIS. MySCIENCE, VII(1-2), 34–41.

