Extensiveness of ICT Skills Possessed by Faculty Members of Science and Technology in Accessing and Using E-resources in Kuvempu and Davangere Universities, Karnataka State, India

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Abstract*-The study focused on level of competency possessed by the faculty members of science and technology in using e-resources in the universities of Karnataka. The investigator had chosen two universities for the survey namely Kuvempu University and Davangere University. The study intended to explore faculty competency level in using e-resources, their preferences over devices, type of e-resources, search engines, file formats to access e-resources and also emphasizes on search strategies used to access e-resources, constraints faced and about which are the areas faculty members need training to use e-resources effectively. The study involves 128 respondents from both the universities with the response rate of 93.43%. The results of the study reveals that majority of faculty members extensively using e-journals followed by online databases and using e-resources more for research purpose followed by class room instruction. They opined that they have good competence in using e-resources and most of them using laptops to access e-resources and agreed strongly that they needed further training to optimizing the use e-resources.*

Keywords: Information and Communication Technology (ICT), ICT competency, E-resources, Information literacy.

Introduction

E-resources are got more importance and also rapid increase in its usage in recent times, due to various reasons like ease to access, search ability, multiple access facility, archival facility and many more and with this one more reason added in recent time that is COVID-19 pandemic situation. It forced people to stay in home and isolated them from neighbors, relatives, friends and of course with workplace. Academicians and students not exempted from this, they are unable to access physical resources available at university and colleges

and all are engaged in online for teaching and learning purpose. Hence the use of electronic resources increased enormously and the situation forced the teaching professionals who are not using e-resources before to access information through online. Information and Communication Technology (ICT) influenced higher education in a bigger way and in other hand higher education sector also adopting ICTs in teaching and learning activities and it is increased in COVID-19 period and after that. At the same time teachers needs to build the competence in using ICT devices and applications to access e-resources. To use e-resources effectively faculty members should get competence in ICT. Hence, the present study emphasized on ICT skills possessed by faculty members to access and use of e-resources. The study involves faculty members of science technology who are working in Kuvempu University and Davangere University in Karnataka, India (Zare-Ee A, 2011).

Review of Literature

Investigator has studied previous similar studies to understand the ways the studies are being conducted by different researchers in the past and results of previous studies helps investigator to execute the present study in the right way. Here, Investigator tried to accumulate some of the useful previous literature on Use of e-resources by faculty/staff members of the universities (Srinivasulu, et al., 2019).

Sivakami and Rajendran investigated the awareness, access and usage of e-resources among faculty members in Arts and Science Colleges at Erode (Sivakami and Rajendran, 2019). The results of the study showed that the majority of the faculty members 88 (31.43%) are using the e-resources for the purpose of giving lecture notes. They have accessed e-resources for their study and research purpose. It is revealed from the study by Palikiti, et al., the majority of the faculty members of Vardhaman College of Engineering, Hyderabad use the e-resources to enhance their teaching and research activities and the study also noticed that e-resources of library are playing important role of functioning of any academic and research institution (Palikiti, et al., 2019).

Lakpathi et al., exhibits form their study is that majority of the research scholars of Osmania University use pattern of e-resources is read findings and conclusion (Lakpathi, et al., 2019). The study also highlighted that major problems in accessing electronic resources are irrelevant information, huge number of hits and network connectivity. The respondents expressed that hands on experience training is required to maximum utility of electronic resources.

Girakaduwa noticed from his study on Usage of Electronic Resources, Services and Challenges faced by the Library users in University of the Visual and Performing arts (UVPA), Sri Lanka is that continuous curriculum revisions are needed with more practical and hands-on sessions (Girakaduwa S, 2019). Furthermore, library should play active role by commencing well-planned user awareness and user education programs on e-resources and developing infrastructure facilities and subscribing more e-resources to the University library.

A study by Shashikala and Srinivasaragavan which revealed that most of the teaching faculty and PG students preferred to search Google and Yahoo as search engine for their information search requirements and they have visited Pub Med, Science Direct and Ovid publisher's journal databases to access E-resources (Shashikala & Srinivasaragavan, 2019). It is concluded from the study is that use of web-based use of E-resources has tremendous impact on the academic performance of the Postgraduate Students & Teaching faculties and also provides curriculum support to students for whom physical access to the library is difficult and time consuming.

The study conducted by Esh (2019) on Usage of e-journals in University of North Bengal (Esh, 2019). The results of the study exhibits that Science Direct has the maximum use 55% among faculty members. Akuffo and Budu studied on Use of electronic resources by students in a premier postgraduate theological university in Ghana, which revealed that most of the respondents have inadequate search skills it is mainly due to lack of training and study found that access problems, search and retrieval problems and staff-related problems were the major constraints to use e-resources among students (Akuffo & Budu, 2019).

Soni et al., have mentioned in their study is that 'Shodhganga' was mostly used by LIS research scholars of Jiwaji University, followed by DOAJ and study also identified that research scholars got information about available E-resources and databases in their institute through the library website, followed by searching on Internet (Soni, et al., 2018). The results of the study by Ahmed and Al-Reyaee showed that overall knowledge and use of e-databases by medical students of Al-Jouf University in Saudi Arabia was much higher than the dental students (Ahmed & Al-Reyaee, 2017). It is evident from the study; the lack of useful e-resources for dental students is the main reason for them to record low response. A similar study by Barman on Knowledge and use of E-Resources by faculty and research students at the Dibrugarh University, Assam, which exhibits that majority of respondents are aware about the e-resources available in the university library (Barman, 2016). The respondents expressed that E-resources are inevitable tool for them in teaching, learning and research process. The study also revealed that around 50% of the faculty members use the e-resources for the purpose of preparation of their classes whereas 32.55% of the research scholars access the e-resources in order to gain current awareness. It is reported from the similar study conducted by the Kashyap is that use of information and communication technology in the form of e-resources by faculty Members working in universities operational in Chhattisgarh is significantly better as compared to faculty members working in universities operational in Madhya Pradesh (Kashyap, et al., 2016). The study suggested that more in-depth study in future is the need of the hour, so that causes of lesser use of e-resources by university faculty members of Madhya Pradesh can be determined.

Objectives of the study

The main objectives of the study are:

- To assess the ICT skills possessed by Faculty members to access and use of e-resources.
- To find the competence level of Faculty members in using ICT devices and its applications to access e-resources.
- To know the extensiveness of usage of different kind of e-resources among Faculty members.
- To know the constraints in acquiring ICT competency skills by faculty members to access and use of e-resources.

Methodology

In this study survey method has been adopted for investigation, a well-structured questionnaire is designed and it is based on objectives of the study. The questionnaire consist of 36 unique questions and it is divided in to 5 sections such as Demographic details, Use of E-Resources, Search Engine and Search Strategies, Competency in Application/Utilization of E-Resources, Attitude towards Application/Utilization of E-Resources, which helped researcher to get authenticated information from respondents (Borgohain, et al., 2017). The study covered two

universities in the state of Karnataka, India, such as Kuvempu University and Davangere University and total strength of the faculty members in the science and technology stream in the above universities is 137, questionnaires distributed physically by giving printed copies and also used google forms to collect the data (Table 1).

Table 1: Total Faculty Strength in Science and Technology

Name of the University	**Total Faculty Strength in Science and Technology Stream**	**No. of responses received**
Kuvempu University	63	60
Davangere University	74	68
Total	**137**	**128**
Response rate		93.43%

As table denotes the questionnaire distributed to all 137 faculty members and received 128 filled questionnaires and the response rate is 93.43%. The data so collected has been tabulated and analyzed with interpretation and also given some constructive recommendations.

Results and Discussion

Analysis

Gender and age-wise distribution of respondents: The table denotes male faculty members dominates female in number i.e. 100 (78.1%) male respondents and 28 (21.9%) female respondents are there in the both universities and majority of respondents (97) age lies between 31-50 years. It reveals that both the universities have young faculty members in science and technology and they are open to contemporary technological changes (Table 2).

Table 2: Gender and Age-wise Distribution of Respondents

N=128		
Gender	**Frequency**	**Percent**
Male	100	78.1
Female	28	21.9
Total	**128**	**100**

N=128		
Age in years	**Frequency**	**Percent**
<=30	8	6.3
31-40	50	39.1
41-50	47	36.7
51-60	22	17.2
61 and above	1	0.8
Total	**128**	**100**

Qualification and designation wise distribution of respondents: It is observed from the table is that the 75% of faculty members have Ph.D. degree and 15.6% respondents are Post-doctorates. The table also shows that 50.8% of faculty members are Asst. Professors followed by 25.8% of Associate professors and 23.4% are Professors. The table reveals that faculty members are highly qualified and majority of them are young faculties working as Assistant and Associate Professors (Table 3).

Table 3: Qualification and Designation-Wise Distribution of Respondents

N=128		
Qualification	**Frequency**	**Percent**
Post Doctorate	20	15.6
Doctorate (Ph.D.)	96	75
M.Phil.	2	1.6
PG	10	7.8
Total	**128**	**100**

N=128		
Designation	**Frequency**	**Percent**
Professor	30	23.4
Associate Professor	33	25.8
Assistant Professor	65	50.8
Total	**128**	**100**

ICT devices used by faculty members to access E-resources: These table reveals about 90.6% of respondents are using their Laptops to access e-resources followed by smart Phones (68%), Desktops (53.1%) and very less number of respondents are using Note pads and Palmtops to access e-resources. The table clearly says that faculty members of both universities are given more preference to Laptops to access e-resources; it may be due to comfort in usage and easy to carry advantages (Table 4).

Table 4: ICT Devices used by Faculty Members to Access E-resources

N=128				
ICT devices	**Responses (Multiple)**		**Percent of cases (N=128)**	**Mean**
	N	**Percent**		
Desktop	68	23.90%	53.10%	0.53
Laptop	116	40.80%	90.60%	0.91
Note Pad	10	3.50%	7.80%	0.08
Smart Phone	87	30.60%	68.00%	0.68
Palmtop	3	1.10%	2.30%	0.02
Total	**284**	**100.00%**	**221.9%**	

Competency level of faculty members in using ICT Devices: The analysis of the above table shows that, the majority of respondents (115) opined that they are more competent in using laptops with the mean value of 1.13, followed by desktops (96) with mean value of 1.30 and smart phones (84) with the mean value of 1.42. The table also shows that 56.3% of respondents are not so competent in using Note pads followed by Palmtops (51.6%). The results of the table reveal that very few numbers of respondents are having fewer competencies in using laptop and desktops. Based on above statistics, it can be assumed that faculty members of universities are using laptops, desktops and smart phones more frequently than other devices; hence the competency level is more among faculty members in using these devices (Table 5).

Table 5: Competency Level of Faculty Members in using ICT Devices

N=128							
ICT devices	**Competency level →**	**More competent**	**Not so competent**	**Less competent**	**In competent**	**Total**	**Mean**
	Scale	**1**	**2**	**3**	**4**		
Desktop	Frequency	96	26	6	0	128	1.3
	Percent	75	20.3	4.7	0	100	
Laptop	Frequency	115	10	3	0	128	1.13
	Percent	89.8	7.8	2.3	0	100	
Note pad	Frequency	18	72	30	8	128	2.22
	Percent	14.1	56.3	23.4	6.3	100	
Smart phone	Frequency	84	34	10	0	128	1.42
	Percent	65.6	26.6	7.8	0	100	
Palmtop	Frequency	10	66	34	18	128	2.47
	Percent	7.8	51.6	26.6	14.1	100	

Purpose of using ICT devices: It is observed from the above table is that, laptop is used by majority of respondents for research (82%), class room instruction (85.9%), for effective teaching (98.4%), to access relevant information (73.4%) and to access scholarly content (85.2%) followed by desktop and smart phone. The table also exhibits that more number of respondents (49.2%) are using Smart phones for entertainment purpose followed by laptops

(25%) and desktops (14.1%). It is clear from the above table is that the faculty members are choosing laptops and desktops for academic purposes but for entertainment they are giving preference to smart phones (Table 6).

Table 6: Purpose of using ICT Devices

N=128					
Purpose	**Devices**	**Responses (Multiple)**		**Percent of cases (N=128)**	**Mean**
		N	**Percent**		
For research work	Desktop	57	5.20%	44.50%	0.45
	Laptop	105	9.50%	82.00%	0.82
	Note Pad	7	0.60%	5.50%	0.05
	Smart Phone	35	3.20%	27.30%	0.27
	Palmtop	3	0.30%	2.30%	0.02
For class room instruction	Desktop	38	3.50%	29.70%	0.3
	Laptop	110	10.00%	85.90%	0.86
	Note Pad	3	0.30%	2.30%	0.02
	Smart Phone	19	1.70%	14.80%	0.15
	Palmtop	0	0	0	0
To make teaching more effective	Desktop	41	3.70%	32.00%	0.32
	Laptop	126	11.40%	98.40%	0.98
	Note Pad	6	0.50%	4.70%	0.05
	Smart Phone	18	1.60%	14.10%	0.14
	Palmtop	0	0	0	0
To access current and relevant information	Desktop	44	4.00%	34.40%	0.34
	Laptop	94	8.50%	73.40%	0.73
	Note Pad	6	0.50%	4.70%	0.05
	Smart Phone	56	5.10%	43.80%	0.44
	Palmtop	4	0.40%	3.10%	0.03
To access scholarly content (e-journals, e-books etc.,)	Desktop	56	5.10%	43.80%	0.44
	Laptop	109	9.90%	85.20%	0.85
	Note Pad	6	0.50%	4.70%	0.05
	Smart Phone	36	3.30%	28.10%	0.28
	Palmtop	4	0.40%	3.10%	0.03
For entertainment	Desktop	18	1.60%	14.10%	0.14
	Laptop	32	2.90%	25.00%	0.25
	Note Pad	4	0.40%	3.10%	0.03
	Smart Phone	63	5.70%	49.20%	0.49
	Palmtop	1	0.10%	0.80%	0.01
Total		**1101**	**100.0%**	**860.2%**	

Extensiveness in usage of E-resources: It is seen from the Table 6 is that most of the respondents (75.8%) are used electronic journals in greater extent, followed by online databases (55.5%), electronic books (46.1), online reference books (42.2%), E-newspapers (37.5%) and Consortia (like UGC Infonet etc.,) (33.6%). The sources like E-thesis and Dissertations (42.2%), Institutional Repositories (41.4) and online reference books (40.6%) are moderately used by the respondents. The table also explores that OPAC (54.7%) and databases on CD/DVD (52.3%) are the sources used little extent by faculty members. It is also observed from above Table 27.3% of respondents opined that they are not at all used the source Databases on CD/DVD. Here, most extensively used source is e-journals (including consortium like UGC Infonet), it may be due to the faculty members are engaged in research activities, and hence they are using e-journals to get relevant literature. In other hand most of the respondents are not using CD/DVD databases or in little extent, it is mainly because of availability of online databases (Table 7).

Table 7: Extensiveness in Usage of E-resources

N=128							
E-resources		**Greater extent**	**Moderate extent**	**Little extent**	**Not at all**	**Total**	**Mean**
	Scale→	**1**	**2**	**3**	**4**		
Databases on CD/DVD	Frequency	10	16	67	35	128	2.99
	Percent	7.8	12.5	52.3	27.3	100	-
Online databases	Frequency	71	42	12	3	128	1.59
	Percent	55.5	32.8	9.4	2.3	100	-
Electronic journals (Full texts/Abstracts)	Frequency	97	25	6	0	128	1.29
	Percent	75.8	19.5	4.7	0	100	-
Electronic books	Frequency	59	50	17	2	128	1.7
	Percent	46.1	39.1	13.3	1.6	100	-
OPAC	Frequency	17	29	70	12	128	2.6
	Percent	13.3	22.7	54.7	9.4	100	-
E-thesis and Dissertations	Frequency	39	54	32	3	128	1.99
	Percent	30.5	42.2	25	2.3	100	-
Online reference books	Frequency	54	52	20	2	128	1.77
	Percent	42.2	40.6	15.6	1.6	100	-
E-newspapers	Frequency	48	40	35	5	128	1.98
	Percent	37.5	31.3	27.3	3.9	100	-
Institutional Repositories	Frequency	32	53	35	8	128	2.15
	Percent	25	41.4	27.3	6.3	100	-
Consortia (like UGC Infonet etc.,)	Frequency	43	51	31	3	128	1.95
	Percent	33.6	39.8	24.2	2.3	100	-

Purpose of E-resources serves to faculty members: It is clear from the Table 7 is that; e-resources are used by faculty members are mainly for research purpose and the percentage of respondents is lies in between 66.4 to 85.2% (mean value in between 0.66 to 0.85) followed by class Room Instruction and to make teaching more effective respectively. The table also denotes most of the respondents (68%) are using E-newspapers for to access current and relevant information followed by OPAC (53.9%) and 64.1% of respondents are using online reference books only for class room Instruction. Based on above table we can assume that most of the faculty members are actively involved in research activities therefore they are using e-resources more for research purpose (Table 8).

Table 8: Purpose of E-resources Serves to Faculty Members

N=128					
E-resources	**Purpose of use**	**Responses (Multiple)**		**Percent of cases (N=128)**	**Mean**
		N	**Percent**		
Databases on CD/DVD	For Research Work	85	4.30%	66.40%	0.66
	For Class Room Instruction	24	1.20%	18.80%	0.19
	To make teaching more effective	25	1.30%	19.50%	0.2
	To access current and relevant information	24	1.20%	18.80%	0.19
	"content (e-journals, e-books etc.,)	19	1.00%	14.80%	0.15
Online databases	For Research Work	98	4.90%	76.60%	0.77
	For Class Room Instruction	51	2.60%	39.80%	0.4
	To make teaching more effective	42	2.10%	32.80%	0.33
	To access current and relevant information	34	1.70%	26.60%	0.27
	"content (e-journals, e-books etc.,)	23	1.20%	18.00%	0.18
Electronic journals (Full texts/Abstracts)	For Research Work	109	5.50%	85.20%	0.85
	For Class Room Instruction	44	2.20%	34.40%	0.34
	To make teaching more effective	35	1.80%	27.30%	0.27
	To access current and relevant information	33	1.70%	25.80%	0.26
	"content (e-journals, e-books etc.,)	25	1.30%	19.50%	0.2

Electronic books	For Research Work	52	2.60%	40.60%	0.41
	For Class Room Instruction	82	4.10%	64.10%	0.64
	To make teaching more effective	52	2.60%	40.60%	0.41
	To access current and relevant information	26	1.30%	20.30%	0.2
	"content (e-journals, e-books etc.,)	15	0.80%	11.70%	0.12
OPAC	For Research Work	27	1.40%	21.10%	0.21
	For Class Room Instruction	22	1.10%	17.20%	0.17
	To make teaching more effective	15	0.80%	11.70%	0.12
	To access current and relevant information	69	3.50%	53.90%	0.54
	"content (e-journals, e-books etc.,)	25	1.30%	19.50%	0.2
E-thesis and dissertations	For Research Work	101	5.10%	78.90%	0.79
	For Class Room Instruction	29	1.50%	22.70%	0.23
	To make teaching more effective	18	0.90%	14.10%	0.14
	To access current and relevant information	25	1.30%	19.50%	0.2
	"content (e-journals, e-books etc.,)	9	0.50%	7.00%	0.07
Online reference books	For Research Work	57	2.90%	44.50%	0.45
	For Class Room Instruction	82	4.10%	64.10%	0.64
	To make teaching more effective	45	2.30%	35.20%	0.35
	To access current and relevant information	19	1.00%	14.80%	0.15
	"content (e-journals, e-books etc.,)	11	0.60%	8.60%	0.09

E-newspapers	For Research Work	28	1.40%	21.90%	0.22
	For Class Room Instruction	34	1.70%	26.60%	0.27
	To make teaching more effective	19	1.00%	14.80%	0.15
	To access current and relevant information	87	4.40%	68.00%	0.68
	"content (e-journals, e-books etc.,)	10	0.50%	7.80%	0.08
Institutional repositories	For Research Work	51	2.60%	39.80%	0.4
	For Class Room Instruction	48	2.40%	37.50%	0.38
	To make teaching more effective	40	2.00%	31.30%	0.31
	To access current and relevant information	25	1.30%	19.50%	0.2
	"content (e-journals, e-books etc.,)	17	0.90%	13.30%	0.13
Consortia (like UGC Infonet etc.,)	For Research Work	84	4.20%	65.60%	0.66
	For Class Room Instruction	34	1.70%	26.60%	0.27
	To make teaching more effective	17	0.90%	13.30%	0.13
	To access current and relevant information	27	1.40%	21.10%	0.21
	"content (e-journals, e-books etc.,)	21	1.10%	16.40%	0.16
Total		**1994**	100.0%	1557.8%	

Preferred search engines to access E-resources by faculty members: Table 8 identifies that leading search engine among respondents is Google, because majority of respondents (98.4%) preferred Google for their searching needs, followed by again Google Scholar (89.8%), Science research (41.4%) and Scinet Science search (25%). Other search engines like Yahoo, Hotbot, Infoseek etc., are less preferred by respondents. Based on above table, it seems that Google's search ability, indexing of websites, versatility in searching; authenticated research articles and citation analysis facility in Google scholar are the key factors while choosing these search engines as their preferred search engines among faculty members (Table 9).

Table 9: Preferred Search Engines to Access E-resources by Faculty Members

N=128					
Search engines		**Most preferred**	**Less preferred**	**Not preferred**	**Total**
Yahoo	Frequency	15	84	29	128
	Percent	11.7	65.6	22.7	100
Google	Frequency	126	1	1	128
	Percent	98.4	0.8	0.8	100
Hot Bot	Frequency	5	48	75	128
	Percent	3.9	37.5	58.6	100
InfoSeek	Frequency	6	51	71	128
	Percent	4.7	39.8	55.5	100
Excite	Frequency	5	37	86	128
	Percent	3.9	28.9	67.2	100
Meta Eureka	Frequency	6	89	33	128
	Percent	4.7	69.5	25.8	100
Google Scholar	Frequency	115	11	2	128
	Percent	89.8	8.6	1.6	100
Scicentral	Frequency	26	49	53	128
	Percent	20.3	38.3	41.4	100
Scienceresearch	Frequency	53	35	40	128
	Percent	41.4	27.3	31.3	100
Strategian	Frequency	6	33	89	128
	Percent	4.7	25.8	69.5	100
Scinet Science Search	Frequency	32	43	53	128
	Percent	25	33.6	41.4	100

Search techniques used by faculty members to access E-resources: It is found from the above table is that; the majority of respondents (93%) opined that, they are using keywords to

search the information in search engines followed by field search technique (64.1%), DOI based search (35.2%) and Phrase search (30.5%). Keyword search technique is very easy and common mode of search; hence the most of respondents are using that search technique (Table 10).

Table 10: Search Techniques used by Faculty Members to Access E-resources

N=128					
Search techniques		**Most preferred**	**Less preferred**	**Not preferred**	**Total**
Keywords	Frequency	119	9	0	128
	Percent	93	7	0	100
Field search	Frequency	82	41	5	128
	Percent	64.1	32	3.9	100
Phrase search	Frequency	39	72	17	128
	Percent	30.5	56.3	13.3	100
Using Boolean Operators	Frequency	19	73	36	128
	Percent	14.8	57	28.1	100
DOI (Digital Object Identifier) based search	Frequency	45	52	31	128
	Percent	35.2	40.6	24.2	100
GUI (Graphical User interface) search	Frequency	21	60	47	128
	Percent	16.4	46.9	36.7	100

Preferred file formats to access and download E-resources by faculty members: Statistics of the above table shows that PDF is the most preferred file format among respondents and 99.2% of respondents are choosing PDF file format while downloading e-resources, followed by MS word (70.3%), PPT (64.8%), JPEG (38.3%), Excel (xls) (34.4%) and HTML with 21.1%. In the other hand 56.3% of respondents expressed that HTML and Excel file formats are less preferred followed by JPEG (55.5%) and other file formats like SGML, CDF, HDF, XDF, DELTA and MAT file are either less preferred or not preferred formats among respondents. The table exhibits that PDF format is very popular among users for downloading the e-content and it is mainly due to its compatibility and user friendly (Table 11).

Table 11: Preferred File Formats to Access and Download E-resources by Faculty Members

N=128					
File formats		**Most preferred**	**Less preferred**	**Not preferred**	**Total**
HTML	Frequency	27	72	29	128
	Percent	21.1	56.3	22.7	100
MS-Word (doc)	Frequency	90	33	5	128
	Percent	70.3	25.8	3.9	100
Excel (xls)	Frequency	44	72	12	128
	Percent	34.4	56.3	9.4	100
PPT	Frequency	83	43	2	128
	Percent	64.8	33.6	1.6	100
JPEG	Frequency	49	71	8	128
	Percent	38.3	55.5	6.3	100
PDF	Frequency	127	0	1	128
	Percent	99.2	0	0.8	100
SGML (Standard Generalized Markup Language)	Frequency	7	65	56	128
	Percent	5.5	50.8	43.8	100
CDF (Common Data Format)	Frequency	11	50	67	128
	Percent	8.6	39.1	52.3	100
HDF(Hierarchical Data Format)	Frequency	7	61	60	128
	Percent	5.5	47.7	46.9	100
XDF (Extensible Data Format)	Frequency	8	44	76	128
	Percent	6.3	34.4	59.4	100
DELTA	Frequency	9	41	78	128
	Percent	7	32	60.9	100
MAT file	Frequency	10	42	76	128
	Percent	7.8	32.8	59.4	100

Level of competency in utilizing E-resources: Table 11 indicates that respondents are more competent in using Electronic journals (89.8%) followed by online databases (75%), Electronic books (74.2%), Online reference books (68.8%), E-newspapers (67.2%), E-thesis and Dissertations (64.1) and Consortia (like UGC Infonet etc.,) with 44.4%. 46.1% of respondents also exhibits that they have not so competent in using OPAC and Institutional Repositories, followed by Consortia (like UGC Infonet etc.,) (45.3%) and Databases on CD/DVD (30.5%). The table also shows that 25.8% of respondents are having fewer competencies in using OPAC followed by databases on CD/DVD with 23.4%. It is clear from above table is that the faculty members have processed good competency in utilizing most of the e-resources except some sort of resources like OPAC and databases on CD/DVD. It is also

observed from the statistics faculty members are not enough competent in using OPAC, UGC infonet resources. Hence library and library professionals need to focus on this and there is need to conduct more and more awareness programmes among faculty members on using of OPAC and UGC Infonet resources (Table 12).

Table 12: Level of Competency in Utilizing E-resources

N=128							
E-resources		**More competent**	**Not so competent**	**Less competent**	**In competent**	**Total**	**Mean**
	Scale →	**1**	**2**	**3**	**4**		
Databases on CD/DVD	Frequency	45	39	30	14	128	2.1
	Percent	35.2	30.5	23.4	10.9	100	
Online databases	Frequency	96	26	6	0	128	1.3
	Percent	75	20.3	4.7	0	100	
Electronic journals (Full texts/Abstracts)	Frequency	115	6	7	0	128	1.16
	Percent	89.8	4.7	5.5	0	100	
Electronic books	Frequency	95	28	4	1	128	1.3
	Percent	74.2	21.9	3.1	0.8	100	
OPAC	Frequency	28	59	33	8	128	2.16
	Percent	21.9	46.1	25.8	6.3	100	
E-thesis and Dissertations	Frequency	82	32	10	4	128	1.5
	Percent	64.1	25	7.8	3.1	100	
Online reference books	Frequency	88	26	13	1	128	1.43
	Percent	68.8	20.3	10.2	0.8	100	
E-newspapers	Frequency	86	27	13	2	128	1.46
	Percent	67.2	21.1	10.2	1.6	100	
Institutional Repositories	Frequency	49	59	15	5	128	1.81
	Percent	38.3	46.1	11.7	3.9	100	
Consortia (like UGC Infonet etc.,)	Frequency	53	58	10	7	128	1.77
	Percent	41.4	45.3	7.8	5.5	100	

Level of proficiency in ICT enabled activities: The above table exhibits that 66.4% of respondents expressed like they are excellent in ICT enabled activities like use of internet, followed by Word processing skills (MS word etc.,) (59.4%), Telecommunication Skills (E-mails, messengers etc.,) (55.5%), Use of databases, e-books, e-journals etc., (Scholarly Content) (53.1%) and only 32% of respondents are excellent in Installation and customization

of hardware and software. Among faculty members 47.7% of respondents having good level of proficiency in Use of online library services (like Web-OPAC, Institutional Repositories etc.,), followed by Spreadsheet and Graphing skills (Excel etc.,) and Use of advanced search with Boolean operators (37.5%), Downloading of articles in different file formats (35.2%) and Use of Internet 30.5%. The table also denotes respondents are fair in proficiency in Use of Frequently Asked Questions (FAQ's) in websites (32%), followed by Installation and customization of hardware and software and Use of advanced search with Boolean operators (28.1%). Faculty members are poor in using RSS (Really Simple Syndication) service with the percentage of 35.2.

The overall statistics of the table indicates that majority of the respondents having either excellent or good in proficiency level in ICT enabled activities but respondents are expressed either fair or poor in using of RSS (Really Simple Syndication) service (56.3%), followed by Ability to use "Alert" service offered by databases (50%), Ability to participate in discussion groups/forums of interest on internet (Social Networks) (43%), Use of Frequently Asked Questions (FAQ's) in websites (41.4%), Use of advanced search with Boolean operators (39.1%) and Installation and customization of hardware and software (35.9%).

Based on the above statistics it is identified that faculty members need more training on the fields like using of RSS (Really Simple Syndication) service, "Alert" service, discussion groups/forums, Use of Frequently Asked Questions (FAQ's) in websites, Use of advanced search with Boolean operators and Installation and customization of hardware and software to increase their proficiency level (Table 13).

Table 13: Level of Proficiency in ICT Enabled Activities

N=128							
ICT enabled activities		**Excellent**	**Good**	**Fair**	**Poor**	**Total**	**Mean**
	Scale →	**1**	**2**	**3**	**4**		
Installation and customization of hardware and software	Frequency	41	41	36	10	128	2.12
	Percent	32	32	28.1	7.8	100	
Use of internet	Frequency	85	39	4	0	128	1.37
	Percent	66.4	30.5	3.1	0	100	
Use of online library services (like Web-OPAC, Institutional Repositories etc.,)	Frequency	50	61	16	1	128	1.75
	Percent	39.1	47.7	12.5	0.8	100	
Downloading of articles in different file formats	Frequency	75	45	8	0	128	1.48
	Percent	58.6	35.2	6.3	0	100	
Word processing skills (MS word etc.,)	Frequency	76	37	15	0	128	1.52
	Percent	59.4	28.9	11.7	0	100	

Spreadsheet and Graphing skills (excel etc.,)	Frequency	44	48	30	6	128	1.98
	Percent	34.4	37.5	23.4	4.7	100	
Telecommunication Skills (E-mails, messengers etc.,)	Frequency	71	44	10	3	128	1.57
	Percent	55.5	34.4	7.8	2.3	100	
Use of advanced search with Boolean operators	Frequency	30	48	36	14	128	2.27
	Percent	23.4	37.5	28.1	10.9	100	
Use of databases, e-books, e-journals etc., (Scholarly Content)	Frequency	68	37	22	1	128	1.66
	Percent	53.1	28.9	17.2	0.8	100	
Use of RSS (Really Simple Syndication) service	Frequency	18	38	27	45	128	2.77
	Percent	14.1	29.7	21.1	35.2	100	
Ability to use “Alert” service offered by databases	Frequency	26	38	31	33	128	2.55
	Percent	20.3	29.7	24.2	25.8	100	
Use of Frequently Asked Questions (FAQ’s) in websites	Frequency	35	40	41	12	128	2.23
	Percent	27.3	31.3	32	9.4	100	
Ability to participate in discussion groups/forums of interest on internet (Social Networks)	Frequency	34	39	31	24	128	2.35
	Percent	26.6	30.5	24.2	18.8	100	

Ratings given by faculty members for E-resources features: Table 13 shows that the faculty members are given excellent (rating) to the Easy accessibility (60.2%) feature of e-resources, followed by features like availability of the journal much before the print copy (52.3%), Downloading facility (48.4%), less time in searching (46.9%) and improved professional competence (46.1%). Faculty members also expressed good (rating) for the features like archival facility (54.7%), followed by expedite the research process (53.1%), less time in searching and access to wider range of information (50.8%), simultaneous usage, author can be contacted directly through e-mail and Improved professional competence with the percentage of 50. Very less members are given fair and poor ratings for e-resources features. Hence, the majority of respondents are given Excellent or Good rating to e-resources

features (Table 14).

Table 14: Ratings given by Faculty Members for E-resources Features

N=128						
Features		**Excellent**	**Good**	**Fair**	**Poor**	**Total**
Less time in searching	Frequency	60	65	3	0	128
	Percent	46.9	50.8	2.3	0	100
Availability of the journal much before the print copy	Frequency	67	56	4	1	128
	Percent	52.3	43.8	3.1	0.8	100
Simultaneous usage	Frequency	58	64	6	0	128
	Percent	45.3	50	4.7	0	100
Easy accessibility	Frequency	77	46	5	0	128
	Percent	60.2	35.9	3.9	0	100
Downloading facility	Frequency	62	59	5	2	128
	Percent	48.4	46.1	3.9	1.6	100
Author can be contacted directly through e-mail	Frequency	53	64	8	3	128
	Percent	41.4	50	6.3	2.3	100
Archival facility	Frequency	46	70	9	3	128
	Percent	35.9	54.7	7	2.3	100
Access to wider range of information	Frequency	55	65	7	1	128
	Percent	43	50.8	5.5	0.8	100
Improved professional competence	Frequency	59	64	2	3	128
	Percent	46.1	50	1.6	2.3	100
Expedite the research process	Frequency	53	68	6	1	128
	Percent	41.4	53.1	4.7	0.8	100

Hindrances faced by faculty members while using E-resources: The table denotes that hindrances faced by faculty members in accessing e-resources, 29.7% respondents faced the

hindrance lack of training in use of ICT tools and applications in greater extent, followed by inability to acquire/own ICT facilities (22.7%). The faculty members also expressed Inability to acquire/own ICT facilities (32%), No ICT facilities at workplace (30.5%), Lack of ICT knowledge (29.7%), Lack of training in use of ICT tools and applications (20.3%) are the hindrances faced by the faculty members in moderate extent. The table also exhibits Lack of access to e-resources in my subject/area (24.2%), Lack of ICT knowledge (22.7%), Lack of training in use of ICT tools and applications (21.9%) these are the some hindrances faced by the faculty members in little extent. The table also shows that the majority of respondents (overall) 71.9% expressed that lack of training in use of ICT tools and applications is the major hindrance faced by the respondents (Table 15).

Table 15: Hindrances Faced by Faculty Members while Using E-resources

N=128						
Hindrances		**Greater extent**	**Moderate extent**	**Little extent**	**Not a hindrance**	**Total**
Inability to acquire/own ICT facilities	Frequency	29	41	21	37	128
	Percent	22.7	32	16.4	28.9	100
No ICT facilities at workplace	Frequency	14	39	21	54	128
	Percent	10.9	30.5	16.4	42.2	100
Lack of ICT knowledge	Frequency	11	38	29	50	128
	Percent	8.6	29.7	22.7	39.1	100
Lack of training in use of ICT tools and applications	Frequency	38	26	28	36	128
	Percent	29.7	20.3	21.9	28.1	100
Lack of assistance from library staff	Frequency	20	32	24	52	128
	Percent	15.6	25	18.8	40.6	100
Lack of access to e-resources in my subject/area	Frequency	17	25	31	55	128
	Percent	13.3	19.5	24.2	43	100
Lack of time to use e-resources	Frequency	13	28	27	60	128
	Percent	10.2	21.9	21.1	46.9	100

Training needed areas for optimum usage E-resourcers: The data from the above table expressed that majority of respondents opined that they need training on different areas like training on using various ICT tools/devices (69.9%), followed by training on various e-resources available (59.3%), Training on methods/strategies available to access e-resources (55.3%), Training on utilizing the IT infrastructure (49.6%) and training on art of reading/concise/briefing application of e-resources for teaching/research (37.4%) (Table 16).

Table 16: Training Needed Areas for Optimum usage E-resources

N=128			
Training areas	**Responses (Multiple)**		**Percent of Cases**
	N	**Percent**	
Training on using various ICT tools/devices	86	25.70%	69.90%
Training on various e-resources available	73	21.90%	59.30%
Training on methods/strategies available to access e-resources	68	20.40%	55.30%
Training on art of reading/concise/briefing application of e-resources for teaching/research	46	13.80%	37.40%
Training on utilizing the IT infrastructure	61	18.30%	49.60%
Total	**334**	**100.00%**	**271.50%**

Major finding of the study

The analysis of the study gives following findings.

- Majority of faculty members are using Laptops, Desktops and smart phones to access e-resources with good competency level and in other hand devices like palmtop, notepads were less used and they have less competency in using these devices.

- If it comes to purpose of using devices the faculty members chosen laptop with high priority for purposes like research, class room instruction, effective teaching, to access relevant information and to access scholarly content followed by desktop and Smartphone. But half of the population opined that they are using Smart phones for entertainment purpose followed by laptops.

- Most of the faculty members used e-resources for research purpose, followed by class Room instruction and to make teaching more effective respectively.

- Google and Google scholar are most used search engines among faculty members and they preferred "keyword" based searching.

- PDF is the most preferred file format among respondents followed by MS word and PPT.
- Major portion of the population expressed that they are more competent in using Electronic journals followed by online databases, Electronic books, online reference books, E-newspapers and E-thesis and Dissertations. They also opined that they are not enough competent in using OPAC and UGC infonet resources.

- The study revealed that more than half of the study population expressed that they are excellent in ICT enabled activities like use of internet, followed by Word processing skills (MS word etc.,), Telecommunication Skills (E-mails, messengers etc.,), Use of databases, e-books, e-journals etc., (Scholarly Content). It is also identified from the study is that faculty members have fair proficiency in Installation and customization of hardware and software and use of advanced search with Boolean operators but they are poor in using RSS (Really Simple Syndication) service.

- Majority of respondents are given Excellent or Good rating to e-resources features like Less time in searching, Simultaneous usage, Easy accessibility, Downloading facility, Archival facility and Access to wider range of information etc.,

- Overall 71.9% of respondents expressed that lack of training in use of ICT tools and applications is the major hindrance faced by them.

- Most of the faculty members opined that they need training on using various ICT tools/devices, on e-resources available and on methods/strategies available to access e-resources to betterment of their usage skills

Suggestions

Based on the above study, we have framed some useful suggestions to improve the skills of faculty members in using e-resources more effectively.

- University administration should organize training programs regularly for faculty members on usage of ICT devices, what are the e-resources available, strategies to access precise information on the online platform and skills to adapt to access and utilize e-resources in optimum level.

- Library and information center of the universities should encourage them to use e-resources like consortia based e-resources (UGC-Infonet) along with other sources available on online platform and should organize awareness programs on e-resources and Opac/Webopac facility etc., because major portion of the faculty members expressed that they are not getting proper assistance from library staff. Hence, library staff of the university libraries should take this seriously and work on it and make them aware of e-resources and also services available in libraries.

- Majority of faculty members are using only keyword based searching and they are

given more preference to this, but to get relevant and precise information faculty members should use advanced search facility, it is available almost all type of information databases, which helps to get relevant information and it saves the searching time also.

Conclusion

To access and utilize e-resources effectively, it is necessary to possess the skills to use ICT devices, skills to access e-resources and to retrieve correct and precise information in minimum time. Make us competent ourselves in using e-resources is became need of the day. We should upgrade ourselves with changing technology and it is very much essential for everyone to use the technology efficiently. The people engaged in higher education, like university teachers needs to make them competent in using e-resources. The study showed that faculty members of said two universities have good competency level in using e-resources in spite of this some portion of faculty members are still lack behind in using e-resources effectively. Hence, University administration and University libraries have to play major role in making them competent in using e-resources by organizing awareness and training programs regularly, which helps faculty members to improve their ICT skills and it make them more competent in using e-resources.

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