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An Assessment of ICT Literacy Competencies among Research Scholars and Faculty Members of Science and Technology Departments in the Universities of Karnataka: a study

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ABSTRACT

The study assessed the ICT literacy skills among research scholars and faculty members in the fiend of Science & Technology in the Universities of Karnataka State. A questionnaire was used to collect the required data from the respondents in the Universities under the study.

The analysis of the collected data covers the respondents' level of skills and knowledge in the use of Computer, Internet, Search engines and other ICT tools and applications in order to use ICT based resources and services in their University libraries. The study concludes that the respondents' utilization of ICT based resources and services through ICT tools and applications was observed to be satisfactory, since both research scholars and faculty members have acquired basic level of literacy skills and confidence in the use of ICT tools and applications to accomplish their academic excellence in teaching and learning process.

Keywords: ICT, ICT Literacy, Assessment of ICT Literacy, ICT Proficiency, Digital Literacy

1. INTRODUCTION

Information and Communication technology literacy is clearly the "basic skills set of the 21st century." Digitized information, networked world, and information communication technologies (ICTs) have became necessities in order to stay abreast in the current globalized knowledge-based economy. It is often perceived that ICT literacy automatically equates to information literacy (IL), which can be defined as the ability to search, locate, evaluate and use information. However, researchers have recognized that the ICT literacy is often a subset of the information literacy (IL), and both are essential for ensuring that students are equipped with the most up-to-date competencies that would enable them to be effective learners and dynamic knowledge workers who are able to make informed decisions beyond the school walls.

ICT may be defined as a term that encompasses all forms of technology used to create, store, exchange, and manipulate information in its various forms (business data, voice input, still images, motion pictures, multimedia presentations, and other forms including those not yet conceived). The term is often used for encompassing both telephony and computer technology together and it is also an acquisition, processing, storage and dissemination of all types of information using computer technology and telecommunication systems.

2. Information and Communication Technology (ICT)-Origin and Definitions

Information and Communication Technology, usually called ICT, is often used as a synonym for information technology (IT) but is usually a more general term that stresses the role of communications (telephone lines and wireless signals) in modern information technology. ICT consists of all technical means used to handle information and aid communication, including computer and network hardware and well as necessary software. In other words, ICT consists of IT as well as telephony, broadcast media, and all types of audio and video processing and transmission. The expression was first used in 1997 in a report by Dennis Stevenson to the UK government and promoted by the new National Curriculum documents for the UK in 2000. ICT deals with the use of electronic computer and computer software to convert, store, protect, process, transmit and retrieve information.

2.1 Definitions

1. According to Information Technology Association of America (ITAA), is "The study, design, development, implementation, support or management of computer-based information systems, particularly software applications and computer hardware."
2. According to Cater (1987) "The system and devices used for receiving, storing, analyzing and communicating information in all its forms, and their application to all aspects of our lives, including the office, the factory, and at home".

3. Scope and Limitation

The study is restricted to the research scholars and faculty members working in the field of science and technology in the selected State Universities of Karnataka state.

The study is limited to Karnataka State. Only ten State general Universities have been selected for the study purpose.

The Universities are as follows:

1. Kuvempu University
2. University of Mysore, Mysore
3. Bangalore University, Bangalore
4. Karnatak University, Dharwad
5. Gulbarga University, Gulbarga
6. Mangalore University, Mangalore
7. Davanagere University, Davanagere

8. Tumkur University, Tumkur
9. Karnataka State Women's University, Vijayapura
10. Vijayanagara Sri Krishnadevaraya University, Bellary

4. Objectives

1. To determine the access and use of computer by the research scholars and faculty members;
2. To know the frequency of use of internet by the Research Scholars and Faculty members'
3. To understand the different literature search strategy followed by the Research Scholars and Faculty members while accessing information from the internet;
4. To know the confidence levels among research scholars and faculty members in the use of ICT application.
5. To know the extent of use of electronic information resources and services by the Research scholars and Faculty members';
6. To understand the remarkable impact of ICT on academic performance of the respondents.
7. To determine the attitude of research scholars and faculty members towards Computer and ICT skills training;

5. Methodology

This study is utilized a descriptive survey research design, as the respondents in the study consists of Research scholars and Faculty members from Science & Technology departments of the Universities in Karnataka State. The researcher distributed the questionnaire to the respondents by visiting each university under the study.

The researcher distributed 486 questionnaires among the total of 898 research scholars of science departments from all the universities and managed to collect 450 questionnaires completely filled indicating the response rate of 92.59% and also 318 questionnaires were distributed among the total of 601 faculty members of science departments from the universities and about 300 duly filled questionnaires were received back which is about 94.33%.

The phase faculty members include Assistant Professors, Associate Professors and Professors working in the post graduate department of the universities. The field Science & Technology covers P.G. departments of Physical sciences, Chemical sciences, Life sciences, Earth sciences and Mathematical sciences

6. Analysis

Access and Use of Computer and Laptop

The advent of computers has revolutionized the lifestyle of the people. Today personal PCs, Cell Phones and Laptops have all not only become an integral part of our culture but also play an essential role in our day to day activities.

It can be seen from the table 1 that, cent percent of research scholars are using computer and laptop. On the other hand among the 300 faculty members, large number of faculty members

i.e. 297 (99.0%) of them are using the computer and laptop, whereas it was surprising to know that only 03 (1%) of them said that they did not use the computer and laptop.

Table-1 Access and Use of Computer and Laptop

Response	Research Scholars		Faculty Members		Total	%
	Frequency	%	Frequency	%		
Yes	450	100	297	99.0	747	99.6
No	00	00	03	1.0	03	0.4
Total	450	100	300	100	750	100

Frequency of Internet Use

In order to measure the frequency of using internet, the respondents were asked to indicate how frequently they use it. Table 2 revealed that more than half of the research scholars used the internet daily (81.65%), followed by (14.9%) weekly; (2%) occasionally; 1.1% monthly and finally only (0.2%) research scholars were used internet fortnightly.

In responses of faculty members, it is found that more than two-third of them used the internet daily (86%), followed by (10.3%) of them who used occasionally only 0.3% of faculty members who used internet monthly. It can be seen from the table that no faculty members were used the internet fortnightly.

Table-2 Frequency of Internet Use

Frequency	Research Scholars(n=447)		Faculty Members (n=295)		Total	%
	Frequency	%	Frequency	%		
Daily	365	81.65	258	86.0	623	83.96
Weekly	67	14.9	31	10.3	98	13.2
Fortnightly	01	0.2	00	00	01	0.1
Monthly	05	1.1	01	0.3	06	0.8
Occasionally	09	2.0	05	1.7	14	1.8

Search Techniques used for Accessing Information from Internet

Table 3 shows that among 410 research scholars 47.8% of them accessing information from Internet to a full extent by using search engines, followed by typing web address (URL) directly to some extent (51.2%), by using subscribing databases to some little extent (39.5%) and through the library website to little extent (37.5%).

On the other hand about 45.8% of faculty members are accessing Internet to full extent by using search engines followed by (47.5%) to some little extent. About 41.0% faculty members accessing information from internet to full extent by typing web address directly, and 44.8% of faculty members accessing information from Internet to little extent by going through the library website

Table-3 Search Techniques Used for Accessing Information from Internet

Nature of Search	Research Scholars(n=410)					Faculty Members (n=290)				
	4	3	2	1	0	4	3	2	1	0
Typing web address (URL) directly	189 (46.0)	170 (41.4)	48 (11.7)	07 (1.7)	36 (8.7)	119 (41.0)	114 (39.3)	44 (15.1)	02 (0.6)	11 (3.7)
Used search engines	196 (47.8)	210 (51.2)	10 (2.4)	00 (00)	34 (8.2)	133 (45.8)	138 (47.5)	00 (00)	08 (2.7)	11 (3.7)
Using subscribing	72	162	122	09	85	39	138	79	07	27
Through the library	59	113	154	10	114	28	80	130	05	47
Using bookmark	35	99	96	11	209	21	60	50	04	155

a. Weights assigned for values are, 4-To full extent, 3-To some extent, 2-To little extent, 1-Less Occasionally, 0, Not at All

Confidence Levels in the Use of ICT Applications

The use of ICT application in the field of education can add value in teaching and learning by enhancing the effectiveness of learning or by adding a dimension to learning that was not previously available.

Table 4 clearly showed that majority of the research scholars (60.8%) have got excellent level of confidence in using the word processors, followed by (56.2%) M.S. PowerPoint, Web browsers (53.3%) and Communication (Email, Forum) (52.8%)

On the other hand majority of the faculty members (73.3%) are having excellent knowledge in using word processor (MS Word, Word Pad) followed by web browsers (62.3%),

M.S. Power Point (60.6%), for Communication (Email, Discussion Forum) (56%), and very small proportion of faculty members are having good knowledge in using web authoring (21%).

Table-4 Confidence Levels in the Use of ICT Applications

ICT Tools	Research Scholars (n=450)					Faculty Members (n=300)				
	4	3	2	1	0	4	3	2	1	0
Word processor (Microsoft word, Word Pad)	274 (60.8)	144 (32.0)	19 (42.2)	11 (2.4)	02 (0.4)	220 (73.3)	63 (21.0)	13 (4.3)	04 (1.3)	00 (00)
Spreadsheet (Microsoft Excel, Lotus 123)	168 (37.3)	160 (35.5)	78 (17.3)	28 (6.2)	16 (3.5)	122 (40.6)	98 (32.6)	61 (20.3)	12 (4.0)	07 (2.3)
Presentations (Microsoft PowerPoint)	253 (56.2)	132 (29.3)	43 (9.5)	15 (3.3)	07 (1.5)	182 (60.6)	92 (30.6)	17 (5.6)	04 (1.3)	05 (1.6)
Statistical Analysis	81	159	98	56	56	37	95	86	54	28

(SPSS)	(18.0)	(35.3)	(21.7)	(12.4)	(12.4)	(12.3)	(31.6)	(28.6)	(18.0)	(9.3)
Operating System (MS Windows, Linux)	161 (35.7)	170 (37.7)	72 (16.0)	28 (6.2)	19 (4.2)	109 (36.3)	117 (39.0)	54 (18.0)	14 (46.6)	06 (2.0)
Web Browsers (Internet Explorer, Firefox, Chrome)	240 (53.3)	125 (27.7)	30 (6.6)	19 (4.2)	28 (6.2)	187 (62.3)	77 (25.6)	14 (4.6)	14 (4.6)	08 (2.6)
Communication (E-mail, Forum)	238 (52.8)	121 (26.8)	63 (14.0)	13 (2.8)	15 (3.3)	168 (56.0)	77 (25.6)	42 (14.0)	08 (2.6)	05 (1.6)
Web authoring (HTML, Dreamweaver)	115 (25.5)	152 (33.7)	82 (18.2)	57 (12.6)	44 (9.7)	63 (21.0)	110 (36.6)	57 (19.0)	54 (18.0)	16 (5.3)

a. Weights assigned for values are, 4-Excellent, 3-Good, 2-Average, 1-Poor, -0, Not at All

b. Values presented in parentheses are associated weighted values

Extent of Use of Electronic Information Resources & Services

Electronic information resources provided wider access to information in higher learning institutions for teaching, learning and research then the traditional print resources through the use of information and communication technologies. Today a large number of electronic resources have been available on the internet and as well as some of the electronic journals are being subscribed by libraries to make them accessible to its readers. The opportunity brought out by electronic information resources and services has in recent years increased their access and use by the readers. Therefore, an understanding of what extent to which each type of electronic resources and services was used has been a great importance for managing electronic resources effectively and efficiently. It has been an important measurement regarding how these resources contributed to the mission statement of the library and consequently to the institutions' effectiveness (Ibrahim, 2004). The availability of electronic information services along with print document was an extra advantage for the users as they have a choice to use both as per their convenience.

Table 5 clearly indicates extent use of electronic information resources and services by the respondents. With regard to usage of different categories of electronic resources, it was found that Internet websites and search engines were found to be used to a greater extent by 194 (45.4%) and 161 (37.7%) research scholars respectively. It is quite disappointing to know that the other category of electronic resources such as electronic thesis and dissertations (18.7%), institutional repositories (18.0%), databases on CD/DVD (7.4%), library OPAC (12.4%), electronic journals (8.6%), electronic books (11.7%), online databases (51.52%), and online reference works (9.1%) and e-news papers (10.3%), received very poor response as they were not at all used by the research scholars.

In case of faculty members, the electronic resources such as Search engines (44.9%), internet websites (44.5%), online databases (38.3%), and electronic journals (28.2%) were found to be used to a greater extent. Opposing to use of these resources, the other resources such as Electronic thesis and dissertations (29.8%), Institutional repositories (26.7%), electronic books (23.2%), and electronic journals (20.1%), were not used by the majority of faculty members

As far the extent of use of electronic services was concerned, it was found that use of electronic reference service was one of the services used to moderate extent by the majority of research scholars (40.2%) followed by use of CD-ROM database services (37.2%), and access to internet in the library (34.8%). It is interesting to note that the rest of the services such as Online CAS/SDI (25.5%), institutional digital repositories (18.9%) and electronic reference services (18.0%) were not used by the research scholars.

On the other hand majority of faculty members (28.6%) were found to be using online databases to a greater extent. Whereas, in case of other services such as online CAS/SDI service (31.7%), institutional digital repositories (22%), electronic reference services (20.5%) were not found to be used by a major portion of faculty members.

Table-5 Extent of Use of Electronic Information Resources & Services

Academic Activities	Research Scholars(n=427)					Faculty Members (n=258)				
	4	3	2	1	0	4	3	2	1	0
Databases on CD/DVD	145 (33.9)	139 (32.5)	69 (16.1)	42 (9.8)	32 (7.4)	77 (29.8)	84 (32.5)	49 (18.9)	19 (7.3)	29 (11.2)
Online Databases	157 (35.1)	176 (41.2)	52 (12.1)	20 (4.6)	22 (51.52)	99 (38.3)	89 (34.4)	22 (8.5)	09 (3.4)	39 (15.1)
Electronic journals (full text/ abstracts)	151 (33.5)	118 (27.6)	93 (21.7)	28 (4.9)	37 (8.6)	73 (28.2)	91 (35.2)	70 (27.1)	10 (3.8)	52 (20.1)
Electronics Books	133 (31.1)	119 (27.8)	101 (23.6)	24 (6.3)	50 (11.7)	57 (22.0)	58 (22.4)	69 (26.7)	14 (5.4)	60 (23.2)
Library OPAC	97 (22.7)	129 (30.2)	70 (16.3)	78 (18.2)	53 (12.4)	42 (16.2)	110 (42.6)	36 (13.9)	54 (20.9)	16 (6.2)
E-thesis & Dissertation	110 (25.7)	128 (29.9)	87 (20.3)	22 (5.1)	80 (18.7)	45 (17.4)	51 (19.7)	74 (28.6)	11 (4.2)	77 (29.8)
Online reference works	149 (34.8)	169 (39.5)	66 (15.4)	04 (0.9)	39 (9.1)	66 (25.5)	92 (35.6)	55 (21.3)	01 (0.3)	44 (17.0)
E-newspapers	153 (35.8)	176 (41.2)	49 (11.4)	05 (11.7)	44 (10.3)	78 (30.2)	90 (34.8)	51 (19.7)	03 (1.1)	36 (13.9)
Internet websites	194 (45.4)	149 (34.8)	20 (4.6)	05 (1.1)	59 (13.8)	115 (44.5)	89 (34.4)	13 (5.0)	02 (0.7)	39 (15.1)
Search engines	161 (37.7)	127 (29.7)	65 (15.2)	14 (3.2)	60 (14.0)	116 (44.9)	62 (24.0)	34 (13.1)	04 (1.5)	42 (16.2)

Institutional Repositories	101 (23.6)	123 (28.8)	61 (14.2)	65 (15.2)	77 (18.0)	39 (15.1)	34 (13.1)	85 (32.9)	31 (12.0)	69 (26.7)
Access to Library OPAC	101 (23.6)	125 (29.2)	118 (27.6)	13 (3.0)	70 (16.3)	48 (18.6)	55 (21.3)	99 (38.3)	22 (8.5)	34 (13.1)
CD-ROM Database Services	85 (19.9)	159 (37.2)	124 (29.0)	07 (1.6)	52 (12.1)	42 (16.2)	88 (34.1)	95 (36.8)	06 (2.3)	27 (10.4)
Online Access to databases	111 (25.9)	161 (37.7)	98 (22.9)	15 (3.5)	42 (9.8)	74 (28.6)	90 (34.8)	64 (24.8)	08 (3.1)	22 (8.5)
Electronic Reference Services	79 (18.5)	172 (40.2)	83 (19.4)	16 (3.7)	77 (18.0)	45 (17.4)	99 (38.3)	49 (18.9)	12 (4.6)	53 (20.5)
Institutional digital repositories	59 (13.8)	138 (32.3)	121 (28.3)	28 (6.5)	81 (18.9)	45 (17.4)	75 (29.0)	64 (24.8)	17 (6.5)	57 (22.0)
Access to internet in the library	92 (21.5)	149 (34.8)	108 (25.2)	11 (2.5)	67 (15.6)	48 (18.6)	62 (24.0)	90 (34.8)	09 (3.4)	49 (18.9)
Online CAS/SDI	69 (16.1)	102 (23.8)	130 (30.4)	17 (3.9)	109 (25.5)	26 (10.0)	43 (16.6)	89 (34.4)	18 (6.9)	82 (31.7)

a. Weights assigned for values are, 4-To greater extent, 3-To moderate extent, 2-,To little extent, 1-Can't say, 0- Not at all

b. Values presented in parentheses is associated weighted values

Remarkable Impact of ICT on Academic Performance

The impact of ICT on learning is currently in relation to use of digital media, primarily computers and internet to facilitate teaching and learning. ICTs are the technologies used in conveying, manipulation and storage of data by electronic means, they provide an array of powerful tools that may help in transforming the present isolated teacher-centered and text- bound classrooms into rich, student-focused, interactive knowledge environments.

Table 6 provides information about perceived impact of ICT on academic performance about 237(52.6%) of research scholars strongly agreed that number of research papers have increased with the use of ICT followed by 191 (42.4%) of research scholars said that they developed self confidence in their academic activities with the ICT. About 230 (51.1%) of research scholars agreed that ICT helps them to keep up-to-date in their subject field and also 229(50.8%) research scholars agreed that ICT motivated them and improved their teaching skills.

On the other hand, about 101 (34.6%) of faculty members strongly agreed that with the help of ICT their dependency on internet has increased, followed by number of research papers have increased (33.6%), keep them up-to-date in their subject field 159(53%), About 158(52.6%) of them opined that they developed self confidence in their academic activities and also 149(49.6%) of faculty members agreed that ICT motivated them and with the help of ICT they improved teaching skills.

Looking at the WA values of 2.19 and 2.31 of research scholars and faculty members respectively, it can be inferred that use of conventional (print) documents has decreased with the advent of ICT and its applications on their academic performance. This was followed by Expedited (speed up) the research process by the faculty members with a WA of 2.05 and research scholars opined the same with the WA of 1.97. Another remarkable impact of ICT on academic performance found that, dependency on the internet has increased by the research scholars (With WA of 1.86), and by the faculty members (with WA of 1.92). Another remarkable impact of ICT on academic performance was found that number of research papers has increased with the WA 1.70 by the research scholars and WA 1.93 by the faculty members. It can be observed that faculty members were developed self confidence in their academic activities with the use of ICT, this was the significance impact found with the WA of 2.06 followed by WA of 1.77 by

the research scholars. It can be seen that research scholars and faculty members were improved motivation and teaching- learning skills with the use of ICT on academic performance with the WA of 1.82 of research scholars and 1.88 respectively.

Table-6 Remarkable Impact of ICT on Academic Performance

Impacts	Research Scholars (n=450)						Faculty Members (n=300)					
	4	3	2	1	0	WA	4	3	2	1	0	WA
Number of research papers have increased	237 (52.6)	151 (33.5)	40 (8.8)	04 (0.8)	18 (4.0)	1.70	101 (33.6)	135 (45.0)	55 (18.3)	02 (0.6)	07 (2.3)	1.93
Developed self confidence in my academic activities	191 (42.4)	203 (45.1)	36 (8.0)	08 (1.7)	12 (2.6)	1.77	82 (27.3)	158 (52.6)	38 (12.6)	03 (1.0)	19 (6.3)	2.06
Improved motivation and teaching-learning skills	162 (36.0)	229 (50.8)	41 (9.1)	13 (2.8)	05 (1.1)	1.82	95 (31.6)	149 (49.6)	51 (17.0)	05 (1.6)	00 (00)	1.88
Expedited (speed up) the research process	142 (31.5)	209 (46.4)	69 (15.3)	27 (6.0)	03 (0.6)	1.97	75 (25.0)	145 (48.3)	71 (23.6)	07 (2.3)	02 (0.6)	2.05
Keep me up-to-date in my subject field	153 (34.0)	230 (51.1)	50 (11.1)	17 (3.7)	00 (00)	1.84	80 (26.6)	159 (53.0)	54 (18.0)	05 (1.6)	00 (00)	1.93
Dependency on the internet has increased	174 (38.6)	202 (44.8)	37 (8.2)	34 (7.5)	03 (0.6)	1.86	104 (34.6)	142 (47.3)	27 (9.0)	27 (9.0)	00 (00)	1.92
Use of conventional (print) documents has decreased	78 (17.3)	172 (38.2)	89 (19.7)	57 (12.6)	14 (3.1)	2.19	70 (23.3)	131 (43.6)	39 (13.0)	39 (13.0)	05 (1.6)	2.24

a. Weights assigned for values are, 4-Strongly agree, 3-agree, 2-Uncertain, 1-Disagree, 0- Strongly disagree

b. Values presented in parentheses is associated weighted values

Respondents' Attitude towards ICT Skills Training

ICT training is an important factor in 21st century workplaces. The importance of computer training can be viewed in two ways. First, it is vital for job applicants to obtain computer training to make themselves more valuable to potential employers and to obtain higher-paying jobs. Second, it is important for educational institutions to provide world class education to the clients.

Computer literacy refers to the ability to use computers, networks and other communication devices in an effective manner. Computer skills have become increasingly important as higher learning institutions have started to depend upon computerized technology to get work done. Computer literate will have a better chance of being successful in a workplace if you are able to navigate computers and use common or specialized computer programs.

It is observed from the table 7 that among the 450 research scholars, 221(49.1%) of them strongly agree that training in computer and ICTs are useful, followed by 228 (50.6%) of them agreed that due to time constraint they are unable to undergo Computer and ICT skills training, Surprisingly about 140 (31.1%) of research scholars agreed that computer and ICT skills are not needed to their profession.

On the other hand among 300 faculty members, 135(45.0%) of them strongly agreed that training in computer and ICTs are useful, followed by 123 (41.0%) of them agreed that due to time constraint they are unable to undergo Computer and ICT skills training, Surprisingly about 85 (28.3.1%) of faculty members agreed that computer and ICT skills are not needed to their profession.

Taking into account of WA scale 2.55 and 2.91, it can be observed that most of the research scholars and faculty members opined that computer and ICT skills are not needed to their profession. Respondents were really wants to know computer and ICT skills but due to time constraint they would not to do so (with WA of 2.15) by research scholars and moderate extent (with WA of 2.48) by faculty members. Training in computers and ICTs skills are useful found to be the positive attitude of research scholars (with WA of 1.98) and faculty members (with WA of 1.86).

Table-7 Respondents' Attitude towards ICT Skills Training

Response	Research Scholars (n=450)						Faculty Members (n=300)					
	4	3	2	1	WA	0	4	3	2	1	0	WA
Training in computers and ICTs skills are useful	221 (49.1)	192 (42.6)	13 (2.8)	07 (1.5)	1.98	09 (2.0)	135 (45.0)	156 (52.0)	03 (1.0)	03 (1.0)	03 (1.0)	1.86
Computer and ICT skills are not needed in my Profession	102 (22.6)	140 (31.1)	79 (17.5)	90 (20.0)	2.55	34 (7.5)	46 (15.3)	85 (28.3)	53 (17.6)	82 (27.3)	34 (11.3)	2.91
I really want to know about computer and ICT but don't have the time	108 (24.0)	228 (50.6)	69 (15.3)	27 (6.0)	2.15	18 (4.0)	56 (18.6)	123 (41.0)	59 (19.6)	43 (14.3)	19 (63.3)	2.48
Programs don't exist for such training in our department	105 (23.3)	182 (40.4)	88 (19.5)	45 (10.0)	1.59	18 (4.0)	51 (17.0)	106 (35.3)	70 (23.3)	66 (22.0)	07 (2.3)	1.61

a. Weights assigned for values are, 4-Strongly agree, 3-agree, 2-Uncertain, 1-Disagree, 0- Strongly disagree

b. Values presented in parentheses is associated weighted values

7. Findings

The following findings will prove the existing condition of the respondents' ICT literacy competencies in using ICT based resources and services in the library and also understand us to ascertain the respondents' attitude towards ICT skills training.

∑ 100% of research scholars are using computer and laptop and also large numbers of faculty members i.e. 99% are using the computer and laptop for their academic activities.

∑ 81.65% of research scholars are using the Internet daily and more than two-third of the faculty members (86%) of them are using Internet daily.

- 47.8% of research scholars are accessing information from Internet to a full extent by using search engines. On the other hand 45.8% of faculty members are accessing internet to a full extent by using search engines.

- Majority of the research scholars (60.8%) have got excellent level of confidence in using the word processors and also large numbers of faculty members (73.3%) are having excellent knowledge in using word processors.

- With regard to usage of different categories of electronic resources, it was found that Internet websites and Search engines were found to be used greater extent by 194 (45.4%) and 161 (37.7%) research scholars respectively. In case of faculty members the electronic resources such as search engines (44.9%) and Internet websites (44.5%) were found to be used to a greater extent.

- Information about perceived impact of ICT on academic performance, about 52.6% of research scholars strongly agreed that, their number of research papers have increased with the use of ICT, on the other hand about 34.6% of faculty members strongly agreed that with the help of ICT, their dependency on Internet has increased.

- 49.1% of research scholars strongly agreed that, training in Computer and ICTs are useful to them, On the other hand 45% of faculty members are strongly agreed that training in Computer and ICTs are useful.

8. Suggestions

- The survey revealed that only 39.5% of research scholars are accessing information from Internet by using subscribing databases and also only 37.5% of research scholars were accessing the information from Internet through the library websites. On the other hand only 41% of faculty members are accessing information from internet to full extent by typing web address directly, only 44.8% of them accessing information from Internet to a little extent by browsing through the library websites. A library user can access variety of primary information for their academic activities by using subscribing databases, library websites, and subject gateways. In this connection concerned library authorities should educate the library users by providing training programs about basic information and Computer literacy skills, which enable them to use ICT based resources at the maximum extent.

- It is found from the survey that only 18.9% of research scholars and 22% of faculty members were using Institutional repositories (IRs) respectively. An Institutional Repository (IRs) is an online archive for collecting, preserving and disseminating digital copies of the intellectual output of an institution. University and Library authorities must setup the IRs in their libraries and also motivate faculty to publish, share and use scholarly information.

- In response to the question perceived impact of ICTs on their academic performance, about 38.6% of research scholars and 34.6% of faculty members in Science and Technology were strongly agreed that with the help of ICTs, their dependency o the Internet has increased. The internet has become an important medium for communication and information provision. By extending Internet service in the library, we can satisfy their information requirements to a greater extent. The University and Library authorities should upgrade the bandwidth of the Internet and also extend Wi-Fi facility, LAN facility in the campus to promote use of electronic information resources and services effectively.

- It has been found from the survey that 49.1% of research scholars and 45% of faculty members were strongly agreed that, training in Computer and ICTs are useful to them. Computer literate person will have a better chance of being successful in a workplace. Government and University authorities should periodically provide training to the academic community in order to enhance their ICT literacy skills.

9. Conclusion

Knowledge of Computer and ICT literacy skills have become increasingly important as higher learning institutions have started to depend upon computerized technology to get work done. Computer literate person will have a better chance of being successful in a workplace.

Based on the above research, it can be confined that the respondents' utilization of ICT based resources and services through ICT tools and applications was observed to be satisfactory, since both research scholars and faculty members have acquired basic level of literacy skills and confidence in the use of ICT tools and applications to accomplish their academic excellence in teaching and learning process.

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