

## USE AND IMPACT OF ELECTRONIC RESOURCES IN ENGINEERING COLLEGES, KARNATAKA: A CASE STUDY

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### ABSTRACT

*The study is conducted to examine use and impact of Electronic resources by students, teachers and research scholars of VTU affiliated Engineering Colleges, Karnataka. The survey research method was adopted for the study. A questionnaire was used as a data collection instrument. The collected data has been analysed with the help of SPSS. Statistical methods like percentage and chi-square were used. The study revealed that 99% of the respondents felt that they did not know the resources well enough, 99.41% users feel that training is important, and 33.10% respondents have agreed about the statement electronic document would rule the future libraries whereas 38.34% disagreed. However there is need for them to acquire more skills in the use of electronic resources. Application of Information Technology in the library is not difficult, if library professionals are aware of the technology. At the same time Librarian should give training to the users for effective use of resources. Otherwise whatever technology application implemented in the library is waste of money and time. The successful digital library will be one that keeps pace with the ever-changing world of information technology. Library professionals must stay up to speed in adopting new models, working in tandem with educators to re-define the learning process to incorporate electronic publishing and resources.*

**Key word:** Electronic Resources, Engineering Colleges, Digital Resources, Information Resources, Information Technology

### 1. INTRODUCTION

For centuries printed information sources were in use and the publishers had a key role in the generation of printed information. Distributors, booksellers and more particularly libraries contributed to a large extent in the dissemination of information. With the introduction of computers in Library and Information Centers, major changes have taken place in the process of storage, retrieval and dissemination of information. One of the significant contributions of web technology has been the creation of digital libraries which allow users to access information resources virtually anywhere in the world. Rapid developments in the field of digital libraries worldwide have given rise to a large number of publications appearing in different digital forms along with networking and consortia which is the slogan of the present day information society.

## **2. REVIEW OF LITERATURE**

Ali, Naushad (2005) examined the use of Electronic Information Services (EIS) among the users of the Indian Institute of Technology (IIT) Library in Delhi, India.. The study found that Boolean logic and truncation were the most often used search facilities by IIT users. Lack of printing facilities, terminals and trained staff are the major reasons that would discourage users from accessing the electronic information service. The survey also revealed that some 60 per cent of users face difficulties while browsing e information.

Dadzie (2005) studied the use of electronic resources by students and faculty of Ashesi University, Ghana to know the level of use and the type of information accessed by the effectiveness of the library's communication tools for information research in the paper titled "Electronic Resources; Access and Use at Ashesi University College.". The findings show that general computer access was high and also the usage for information access was high due to the university's state-of-the-art infrastructure. Usage of some internet resources was also very high while the usage of scholarly databases was quite low.

Doraswamy (2005) studied the use and familiarity of electronic information resources in paper titled "Familiarity and Use of the Available Electronic Information Resources by the Students in U.R Siddhartha Engineering College Library, Vijayawada: Survey". The findings show that 61.25 percent students were familiar with electronic information resources, 27.50 per cent of the students used the computer daily and 5.63 per cent have never used it. A small percentage of students, i.e., 2.5 per cent of students used CD-ROM, 33.13 per cent internet, 38.13 per cent e-mail, 36.87 per cent search engines, and 21.25 per cent use VRSECE website 'daily' respectively. The online databases were used by 25 per cent and VRSECE catalogue' once a month'.18.75 per cent of students use online journals rarely.42.50 percent of the students use electronic information resources for communication purposes. The main problems faced while using electronic information resources were lack of training and time.

Nicholas (2000) surveyed 300 Journals and media librarians.. The survey showed that 68 per cent journalists and media librarians used the internet. The findings of survey provided that 58 per cent of the student journalists used internet very frequently, 24 per cent sometimes, 15 percent occasionally and 3 percent never. All the respondents who used internet were also using email. 18 per cent of the respondents used listed serves and were members of discussions groups. 24 per cent of the respondents used newsgroup services of the internet.

Smith (2003) in his paper titled "Changes in faculty reading behaviors: The Impact of Electronic Journals on the University of Georgia". The survey explored the role of electronic journals in the faculty and also studied their weekly scholarly reading habits. The results indicated that almost three quarters of respondents reported reading at least one article from an online source every week and that the junior faculty members used electronic resources more than senior faculty members.

The major findings of the earlier studies are,

- The faculty and research scholars have sufficient knowledge about electronic resources compared to students.
- The use of academic libraries was influenced most by users perceived familiarity with the library and its resources.

- There was increase in electronic resources usage day by day and decrease in the frequent use of printed materials.
- The low level of technical problems was deterrent to the use of electronic journals and user preferred not read at length on screen.
- Electronic resources are increasingly used among scholars and also becoming an important component in their research
- Lack of time, lack of training, lack of infrastructure, and lack of technical staff were the most important barriers for the effective use of the internet.

### **3. ELECTRONIC RESOURCES AND SERVICES**

In the fast-emerging and ever-growing information explosion, it is very difficult to retrieve particular information without wasting time. Recent advances in the field of information technology contribute significantly to improve the services of libraries with printed document along with computers. The impact of technologies such as CD-ROMs, multimedia, computer networks, Internet, etc. has lead to paperless society. With the availability of higher configuration computers it is possible to digitize and store information in the form of high quality graphics, color images, voice signal and video clips at a relatively affordable cost.

There are several forms and types of electronic resources which are available on the internet, some of the popular ones that are gaining ground are the electronic journals, standards, technical specifications, reports, patents, full text articles, trade reports and hosts of other document sources. Also the printed editions of scholarly journals are available on the web. The publishers of journals are themselves providing services like contents, abstracts of articles, full text, before the actual printed edition is put on the stands. Majority of this kind of service providers are those publishers who have several journal publications to their credit, e.g., Elsevier, Academic press, Springer, Oxford University Press, Taylor and Franc's Blackwell Science and others.

### **4. NEED FOR THE STUDY**

Today the Libraries are undergoing transformation and facing major challenges like – shrinking budgets, shortage of space, increasing cost of publications, and advances in the field of information and communication technology. The remarkable growth of electronic information in the last 10 years has changed the scenario and has solved the problem of space. The information technology has changed the complexion of the libraries in a big way. The user community is becoming more and more familiar with these tools and now they have started using them very regularly. The usage and the impact of this electronic era on the non-electronic era need to be evaluated. Technical institutions being the first to initiate the use of latest technologies, study of use and impact of electronic resources at these institutions is the need of the hour, the results of which will facilitate other academic institutions to follow.

### **5. OBJECTIVES**

1. Study the user's awareness about electronic information resources and services available in the library.
2. Study the purpose and frequency of using the electronic resources and services available in the library.
3. Study the impact of electronic resources and services on the academic work of students and teachers.

4. Locate the impediments faced by the users while accessing and using the electronic resources.
5. Study the comparison between usage of electronic resources and print sources of information.
6. Study the knowledge of Library staff about IT facility, electronic resources, and information literacy.

## **6. HYPOTHESES**

Based on previous studies following hypotheses has been formulated.

1. All the users are not aware about the electronic resources and services provided by their institute library.
2. Effective utilization of electronic resources is depending on ease of access, good digital infrastructure, and awareness of varied resources and its integration.
3. Frequency of using internet is more for personal communication like e-mail and social networking compared to access of e-resources.
4. The users need training for handling the electronic resources.
5. The library staffs do not have sufficient knowledge about e-resources and information communication technology.

## **7. SCOPE AND LIMITATION**

The scope of the present study is limited to the selected Visvesvaraya Technological University(VTU), Belgaum, Karnataka state Engineering Colleges; those come under Karnataka Examination Authority, 2009 Common Entrance Test, Karnataka.

In the year 2009, 153 Engineering Colleges are admitted seats through CET, Karnataka. Out of which 135 colleges have been taken as samples for this study.

## **8. METHODOLOGY**

The survey method was considered most appropriate for this study because it measures users' background, experience and what they know about electronic information, and it was well suited to the research questions taken up for this study. The study was carried out in two phases i.e.. Pilot Study and Full Study

On the basis of pilot study, the questionnaire was further improved and standardized. Two questionnaires were designed keeping in view the objectives of the study for collecting usage data from different users. The questionnaire was distributed to the undergraduates, postgraduates, research scholars and faculty members of selected VTU Engineering Colleges. 153 colleges are identified as sample for this study. Out of which based on the available infrastructure, resources and services available in the college libraries, questionnaire were distributed to 135 colleges. Of these 102 questionnaire duly filled by the Librarians and from 81 colleges 1012 users' returned their questionnaire with answers.

## 10. DATA ANALYSIS AND INTERPRETATION

In this study, Questionnaire was distributed to 116 private un-aided college librarians, 7 to private aided and minority religious college Librarians, and to minority linguistic.

### 10.1 Availability of INDEST-AICTE Consortium Journals

**Table -1: INDEST-AICTE Consortium Journals**

e-Journals	Respondents	
	N	%
IEL/IEEE	102	100
ASME	68	66.67
ASCE	46	45.10
Science Direct	21	20.59
EBSCO	56	54.90
ACM	39	38.24
Emerald	9	8.23
Nature	5	4.90
Proquest	5	4.90
Springerlink	19	18.63
JCCC	29	28.43

Above table shows that, 102 respondent's colleges subscribe IEL/IEEE online journals for the library. Out of 102 colleges, 68(66.67%) colleges subscribe ASME journals, 46(45.10%) colleges ASCE, 21(20.59%) Science Direct, 56(54.90%) EBSCO, 39(38.24%) ACM, 9(8.83%) Emerald, 5(4.90%) Nature, 5(4.90%) Proquest, 19(18.63%) Springerlink, and 29(28.43%) JCCC.

### 10.2 Users of e-journals

**Table -2: E-Journal Users**

Users	Respondents	
	N	%
UG	20	19.61
PG	85	83.33
Research Scholars	89	87.25
Faculty	99	97.06

Librarians were enquired about the main users of e-journals and 99(97.06%) indicated faculty members, 89(87.25%) indicated research scholars, 85(83.33%) mentioned post graduate students, and 20(19.61%) of them indicated under graduate students. This data clearly indicated that the under graduate students sparingly used the e-journals. This could be due to lack of awareness of e-journals and its advantages and definitely can be bridged through orientation programmes.

### 10.3 Training for usage of electronic resources to the users

**Table-3: Training Programme for using e-resources**

Training	Respondents	
	N	%
Yes	88	86.27
No	14	13.73
<b>Total</b>	<b>102</b>	<b>100</b>

Above table shows that, out of 102 Librarians, 88(86.27%) of them said that they give training to their users about how to use the electronic resources whereas 14(13.73%) of them said they are not giving any training to their users.

Application of Information Technology in the library is not difficult, if library professionals are aware of the technology. At the same time Librarian should give training to the users for effective use of resources. Otherwise whatever technology application implemented in the library is waste of money and time.

### 10.4 Awareness about library's e-resources/services

**Table-4: E-resources/services awareness**

Respondents	Yes		No		Total		Chi <sup>2</sup> (df:C)
Under Graduate	402	74.86	135	25.14	537	53.07	
Post Graduate	295	98.00	6	2.00	301	29.74	
Research Scholar	75	94.94	4	5.06	79	7.81	109.8562
Faculty	95	100	0	0	95	9.39	(3:0.0052)
<b>Total</b>	<b>867</b>	<b>85.67</b>	<b>145</b>	<b>14.33</b>	<b>1012</b>	<b>100</b>	

It shows that 402(74.86%) under graduates, 295(98%) of post graduates, 75(94.94%) of research scholars and 100% of faculty were aware of their library e-resources and services. The users who were unaware of library e-resources were below 15%. The result shows that from the total, 867(85.67%) of users were aware of the library e-resources and services. Whereas 145 users unaware.

Above table shows that Chi-Square test for independence is significant at 1 per cent level of significance. The value of  $\chi^2$  is 109.8562 and the degrees of freedom (df) is 3. The value of p shows extremely statistically significant ( $p \leq 0.01$ ). This implies that there is a significant variation among the users as far as the awareness of e-resources/services provided by the library is concerned.

### 10.5 Importance of training for using e-resources

**Table-5: Training for using e-resources**

Respondents	Yes		No		Total		Chi <sup>2</sup> (df;C)
	N	%	N	%	N	%	
Under Graduates	535	99.63	2	0.37	537	53.06	29.59215 (3;0.0052)
Post Graduates	301	100	0	0	301	29.74	
Research Scholars	75	94.94	4	5.06	79	7.81	
Faculty	95	100	0	0	95	9.39	
<b>Total</b>	<b>1006</b>	<b>99.41</b>	<b>6</b>	<b>0.59</b>	<b>1012</b>	<b>100</b>	

The results show that maximum users opined that training is important to make maximum use of e-resources. The data indicates that 100% of post graduates and faculty feel that training is important for making proper use of electronic resources. From the 1012 respondents it has been found that 1006(99.41%) users feel that training is important and 6(0.59%) do not feel the need for it.

### 10.6 Awareness about subscription of INDEST Consortium

**Table-6: INDEST Consortium subscription**

Respondents	Yes		No		Total		Chi <sup>2</sup> (df;C)
	N	%	N	%	N	%	
Under Graduates	401	74.67	136	25.33	537	53.06	95.56916 (3;0.0052)
Post Graduates	291	96.68	10	8.64	301	29.74	
Research Scholars	72	91.14	7	11.39	79	7.81	
Faculty	95	100	0	0	95	9.39	
Total	859	84.88	153	15.12	1012	100	

All the engineering college's library subscribe e-journals for their users under INDEST Consortium. It is important to know from the users if they are aware of INDEST Consortium's name and of these e-resources. It has been found from figure No. 5.3.7 that 401(74.67%) under graduates, 291(96.68%) of post graduates, 72(91.14%) of research scholars and very interestingly 95(100%) faculty were aware of INDEST Consortium. The results show that under graduates were comparatively less aware of INDEST Consortium e-journals than other users. From the total population, it has been found out that 83.10% of users were well known to INDEST and 15.12% were unaware of INDEST e-resources.

### 10.7 Use of INDEST Consortium

**Table-7: INDEST Consortium use**

Respondents	Yes		No		Total		Chi <sup>2</sup> (df;C)
	N	%	N	%	N	%	
Under Graduates	27	7.18	374	77.43	401	46.68	440.8805 (3;0.0052)
Post Graduates	199	52.51	92	19.05	291	33.88	
Research Scholars	69	18.35	3	0.62	72	8.38	
Faculty	81	21.54	14	2.90	95	11.06	
Total	376	43.77	483	56.23	859	100	

From the above table it is depicted that 27(7.18%) of under graduates, 199(68.38%) of post graduates, 69(18.35%) research scholars and 81(21.54%) of faculty make use of INDEST e-resources. The data shows that research scholars make more use of e-resources as compared to faculty. The result show that from the total number of 859 were aware about subscription of INDEST Consortium, 376(43.77%) users use INDEST e-resources and 483(56.23%) users were unaware and didn't use it.



### 10.8 Use of electronic/print format

**Table-8: Use of electronic/print format**

Document you prefer to use	UG		PG		RS		FY		Total		Chi <sup>2</sup> (df;C)
	N	%	N	%	N	%	N	%	N	%	
Print	31	5.77	5	1.66	0	0	0	0	36	3.56	19.4931 (6;0.0034)
Electronic	7	1.30	4	1.33	2	2.53	0	0	13	1.28	
Both	499	2.93	292	97.01	77	97.47	95	100	963	95.16	
Total	537	3.06	301	29.74	79	7.81	95	9.39	1012	100	

The library provides information to its users in printed as well as in electronic format. The users use both the formats and when asked which format they prefer to use. The under graduates 31(5.77%), post graduates 5(1.66%) preferred to use printed document, where as faculty and research scholars response were negative (Figure No 5.3.11). The electronic format was used by under graduates 7(1.30), post graduates 4(1.33%) and research scholars 2(2.53%), while faculty do not make use of it. The response shows that 499(92.93%) under graduates, 292(97.01%) post graduates, 77(97.47%) research scholars and 95(100%) faculty preferred to use the document in both the format. The result reveal that from total, 36(3.56%) users preferred only printed document, 13(1.28%) preferred electronic document only and 963(95.16%) preferred to use the document in both the format.

The above table shows that for users the chi-square test for independence is significant at 1 per cent level is significance. The value of  $\chi^2$  is 19.4931 and the degree of freedom (df) is 6. The value of p shows statistically significant ( $p \leq 0.10$ ).

### 10.9 Frequency of use of Online Services

The internet provides the information to users and also saves their time. The users were asked how often they go online for accessing the information they need. It is very clear that 169(31.47%) under graduates, 145(48.7%) post graduates make use of online services occasionally. The users who used online services daily were 50(9.31%) under graduates, 11(3.66) post graduates, 37(46.84%) and 31(32.63%) faculty members. The users who used online services weekly were 132(24.58%) under graduates, 112(37.21%) of post graduates, 30(37.97%) research scholar and 47(49.47%) faculty. From 1012 respondent, the data indicates that rarely 31.04% and weekly 31.72% which are more as compared to the use of online services sometimes(24.5%) and daily(12.75%).

**Table-9: Online Services usage frequency**

Frequency of use of online services	UG		PG		RS		FY		Total		Chi <sup>2</sup> (df;C)
	N	%	N	%	N	%	N	%	N	%	
Occasionally	169	31.47	145	48.17	0	0	0	0	314	31.04	279.9301 (9;0.6608)
Some times	186	34.64	33	10.96	12	15.19	17	17.89	248	24.51	
Weekly	132	24.58	112	37.21	30	37.97	47	49.47	321	31.72	
Daily	50	9.31	11	3.66	37	46.84	31	32.63	129	12.75	
Total	537	53.06	301	29.74	79	7.81	95	9.39	1012	100	

The Table No.9.9 shows for users the chi-square test for independence is significant at 1 per cent level of significance. The value of  $\chi^2$  is 279.9301 and the degree of freedom (df) is 9. The value of p shows statistically significant ( $p \leq 0.01$ ). This implies that there is a significant variation among the users as much as using online e-services.



### 10.10 Frequency of using E-journals

**Table-10: E-journal usage frequency**

Frequency of use of e-journals	UG		PG		RS		FY		Total		Chi <sup>2</sup> (df;C)
	N	%	N	%	N	%	N	%	N	%	
Daily	0	0	11	3.78	20	27.78	21	22.11	52	6.05	397.8518 (9;0.6608)
Once in a week	22	5.49	102	35.05	40	55.56	57	60.00	221	25.73	
Monthly	96	3.94	33	11.34	12	16.66	17	17.89	158	18.39	
Occasionally	283	0.57	145	49.83	0	0	0	0	428	49.83	
Total	401	6.68	291	33.88	72	8.38	95	11.06	859	100	

The above table indicates that out of 1012 respondents only 859 responded. The use of electronic journals was by 22(5.49%) under graduates once in a week, 96(23.94%) monthly, 283(70.57%) occasionally. None of the under graduates use e-journals daily. 11(3.78%) post graduates uses electronic journals daily, 102(35.05%) once in a week, 33(11.34%) monthly, and 145(49.83%) occasionally. Thus, under graduates and post graduates uses electronic journals occasionally. 20(27.78%) research scholars uses electronic journals daily, 40(55.56%) once a week, 12(16.66%) monthly. 21 (22.11%) Faculty use daily, 57(60%) once in a week, 17(17.89%) once a monthly.

The chi-square test for independence is significant at 1 per cent level of significance. The value of  $\chi^2$  is 397.8518 and the degree of freedom (df) is 9. The value of p shows statistically significant ( $p \leq 0.01$ ). This implies that there is a significant variation among users. It has been found that maximum numbers of users are using electronic journals occasionally more i.e. 428(49.83%) followed by 221(25.73%) once in a week, 158(18.39%) monthly, and 52(6.05%) daily

### 10.11 Purpose of using e-resources

The library provided electronic resources/services to its users. It is important to know from the users that for what purpose they are using e-resources. It has been found from below table that for writing paper access e-resources by 81(85.26%) faculty, 41(51.90%) research scholars, 39(7.26%) post graduates, under graduates make very less use of these resources, their response was 0.93% only. 85(89.47%) faculty 55(69.62%) research scholar, 101(33.55%) post graduates, and 21(3.91%) under graduate access e-resources for seminar. The e-resources are used maximum by faculty for academic work i.e. 100%, whereas post graduates 299(99.34%) and 71(89.87%) research scholars and 325(60.52%) under graduates. 11(11.58%) faculty, 29(36.71%) research scholars, 281(93.36%) post graduates, 210(40.78%) under graduates using e-resources for projects work. For research work 10(3.32%) post graduates use e-resources, 75(94.94%) research scholars and 37(38.95%) faculty answered positively. The e-resources are used maximum for research work by faculty and research scholar as compared to other users.

**Table-11: Uses of e-resources**

Purpose	UG		PG		RS		FY		Total	
	N	%	N	%	N	%	N	%	N	%
Writing Papers	5	0.93	39	7.26	41	51.90	81	85.26	166	16.40
Seminar/Conference	21	3.91	101	33.55	55	69.62	85	89.47	262	25.89
Academic work	325	60.52	299	99.34	71	89.87	95	100	790	78.06
Projects	219	40.78	281	93.36	29	36.71	11	11.58	540	53.36
Research work	0	0	10	3.32	75	94.94	37	38.95	122	12.06
Other	159	29.61	45	14.95	0	0	0	0	204	20.16

### 10.12 Barriers in using e-resources

**Table-12: E-resource usage barriers**

Barriers in using e-resources	UG		PG		RS		FY		Total		Chi <sup>2</sup> (df;C)
	N	%	N	%	N	%	N	%	N	%	
Unorganized	112	20.86	70	23.26	25	31.65	17	17.89	275	27.17	159.2949 (15;2.4082)
Lack of time	275	51.21	155	51.50	69	87.34	85	89.47	584	57.71	
In adequate trained staff in IT applications	280	52.14	95	31.56	37	46.84	25	26.32	437	43.18	
Lack of Knowledge	175	32.59	57	18.94	27	34.18	11	11.58	270	26.68	
Access time is slow	267	49.72	95	31.56	36	45.57	49	51.58	447	44.17	
Uncomfortable	95	17.69	27	8.97	17	21.52	05	5.26	144	14.23	

The users are making use of e-resources provided by their institute library. So they were asked about various types of barriers they face while using e-resources. It is evident that 20.86% under graduates, 23.26% post graduates, 31.65% research scholar, and 17.89% faculty members feel that the information is not properly organized. 51.21% under graduates, 51.50% post graduates, 87.34% research scholar, and 89.47% faculty do not access e-resources due to lack of time. 95(17.69%) under graduates, 27(8.97%) post graduates are uncomfortable while using the e-resources while very few research scholar and faculty members have the same feeling. From the results is clear that maximum users' response is due to inadequate trained staff in IT applications, the major barrier to use e-resources. 49.72% under graduates, 31.56% post graduates, 45.57% research scholar and 51.58% faculty admitted that accessing the information from internet is slow. From the total population it has been found that 44.17% of users find the working of internet slow, 57.71% of user fell lack of time as barrier in using e-resources. 43.18% said inadequate trained staff in IT applications.

### 10.13 Opinion towards electronic documents would rule the Future Libraries

**Table-13: Role of e-documents in future libraries**

Opinion	UG		PG		RS		FY		Total	
	N	%	N	%	N	%	N	%	N	%
Agree	152	28.31	95	31.56	39	49.37	49	51.58	335	33.10
Disagree	210	39.11	108	35.88	30	37.97	40	42.11	388	38.34
No Idea	175	32.58	98	32.56	10	12.66	6	6.31	289	28.56
Total	537	100.0	301	100.0	79	100.0	95	100.0	1012	100.0

The above table indicates that 28.31% under graduates, 31.56% post graduates, 49.37% research scholar, and 51.58% faculty members have agreed that electronic documents would rule the future libraries whereas 39.11% under graduates, 35.88% post graduates, 37.97% research scholar, and 42.11% faculty disagree this statement. 32.58% under graduates, 32.56% post graduates, 12.66% research scholar and 6.31% faculty have no expressed their opinion.

In total, 33.10% respondents have agreed the statement where as 38.34% disagreed. The 28.56% respondents had no idea.

## **11. FINDINGS OF THE STUDY**

1. Problems with the use of e-resources is often to do with knowledge, to the resources and usage skills: 99% of the respondents felt that they did not know the resources well enough. One third of the respondents considered that due to lack of skill, were not able to use electronic resources.
2. 85.67% of users are aware and 14.33% of then do have awareness about e-resources and services by their library.
3. 99.41% users feel that training is important and less than a percent (0.59%) do not feel the need for it.
4. 86.07% of users were familiar with INDEST and 13.93% were unaware of INDEST e-resources.
5. From total users, 50.52% access e-journals occasionally. One fourth of the respondents use e-journals once a week.
6. As far as training in the use of e-resources was concerned, the respondents most often preferred training sessions and those on e-resources within a specific subject field/discipline. There appeared to be a need of training in information retrieval a well.
7. The small percentage of users don't feel that internet/electronic resources can replace print document. This implies that there is a significant difference among the users as far as the replacement of internet /e-resources with the print document is concerned.
8. 33.10% respondents have agreed about the statement electronic document would rule the future libraries whereas 38.34% disagreed. 28.56% respondents said that they had no idea.
9. 102 respondent's colleges subscribe IEL/IEEE online journals for the library. Out of 102 colleges, 68(66.67%) colleges subscribe ASME journals, 46(45.10%) colleges ASCE, 21(20.59%) Science Direct, 56(54.90%) EBSCO, 39(38.24%) ACM, 9(8.83%) Emerald, 5(4.90%) Nature, 5(4.90%) Proquest, 19(18.63%) Springerlink, and 29(28.43%) JCCC.

## **12. SUGGESTIONS**

Based on the findings, the focus of the study has been laid on efficient use of electronic resources among the faculty members and all the students in the Engineering Colleges, Karnataka.

Following suggestions are derived out the study for other engineering colleges

### **1. Awareness about the e-resources**

- Library should subscribe to e-resources keeping in view the priorities and preferences of users.
- Announcements should be done by the library about the availability of new e-resources or additions of new databases for user of the library.
- Library should provide the facilities for the user to get familiar with e-resources subscribed by the library; this can be done by the presentations organized by the concerned publishers or vendors.
- Special training programs should be organized for students and faculty member for the maximum use of e-resources so that users can adequately trace relevant information.
- The library should also organize orientation programs for the new students and faculty members every year.

### **2. Improvement in information technology services**

- More computers with the latest specifications and multimedia kit should be installed, so that the users can use internet telephony, video conferencing chatting and other useful services of the internet.
- Technical staff or technically trained staff should be appointed to assist the users in accessing the information,
- There should be complete campus networking.
- Problems related to slow connectivity should be over come by upgrading the band width.

### **3. Administration/Management services**

- Building a library staff team with the appropriate skills.
- The library should organize a training program for the library professionals so that they are able to assist users and they can work with comfort in the technical environment.
- Joining consortium and go for other libraries membership.
- Determining and revising strategies for e-resource acquisition,
- Making co-ordination and co-operation with the academic departments and management of the institutions.
- Try to acquire related free e-resources from net.
- Provide all your resources in single window system.

**4. Using RSS (Really Simply Syndication) and academic blogs**

- The important roles of academic libraries is to promote and provide instructions in the use of electronic resources, as numerous blogs and RSS feeds are available from a variety of scientific databases, electronic journals and electronic books, which there are still not well utilized by many academic libraries.

**5. Improvement in infrastructures/System and Space**

- The impact of print journals on infrastructure is managing the physical space for growth of the collection over time. Due to electronic information it is believed that space problem has been solved but still the space is the most important requirement for the print format, network, computer hardware/software and systems staffs are required to provide access to electronic resources.

**6. Document delivery/interlibrary loan services**

- The library's document delivery service which provides copies of articles with free or fee to the user/distant learners should be delivered at right time,
- Resource sharing can be done by making network with other libraries & institutions.

**7. Circulation/Access/Reference Services**

- Better information can be provided about the existence of e-journals and their characteristics,
- Standards for presentation of use data,
- Easier methods of providing access to electronic journals either through cataloging or in list form,
- An assured solution to archiving,
- Reference staffs are responsible for materials selection in addition to the usual function of answering questions, training classes and performing public relations function such as promoting the availability of services,
- To identifying e-journal candidates for purchase, evaluating potential purchaser, helping students and faculty use the e-journals effectively, incorporating information about their required documents.

**13. CONCLUSION**

From the foregoing, it is obvious that users of engineering colleges need to do more in order to improve on their ICT skills so as to equip them in utilizing the enormous benefits available in electronic formats. The high level of usage of electronic resources even as evident among the user is an indication to the fact that even without the expertise knowledge of manipulating information in an electronic environment, students are still getting satisfaction from the little they could get out of electronic sources although handicapped by their low level of ICT experience. This high level of use is also as a result of their perception of ease and usefulness of electronic sources such as the web.

Engineering college librarians have to be serious in developing their own proficiency as well as must find out how to develop the professional competency in general. Since the users are more prone to on-line and electronically delivered services, the growing role of the librarian

in engineering colleges would lie in information counseling, training, advising users on services and information products appropriate to their needs and how best to use them. This is a time that necessitates innovative ways of thinking about services, collections, information access and also our roles as academic librarians. Being prepared to manage changes can furnish us with the ability to flourish.

#### **14. RECOMMENDATIONS OF FURTHER RESEARCH**

The present study deals with use and impact of e-resources in engineering colleges, Karnataka this can be extended over to the other states of engineering colleges. Detailed analysis can be taken to see the impact of technology on libraries and usage. Further studies could identify which barriers occur at which stages in the information using process and how can these obstacles be over come. There is a vast scope for further research to study different types of users' behaviour and comparison of user's behaviour and attitudes towards the e-resources. Finally investigator believes that studies are needed on ways to improve and encourage students to use maximum electronic information resources.

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