

Changing expectations and approach of library users in ICT environment: A survey of selected engineering and technology institutions.

Rajesh Kr. Bhardwaj

Librarian, FORE School of Management New Delhi

rkdce2004@gmail.com

0 ABSTRACT

This paper discussed the changing expectations and approach in ict environment of library users of engineering and technology institutes affiliated to University of Delhi and GGSIP University Delhi. It analyzes the motive of users visit to library, views of library users about the library facilities and services. It depicts the statistics of IT equipments and resources available with the library. It evaluated the usage of library resources, preference and satisfaction level of the users, discussed the reflections of trends in library growth and development and assessed the future plans for library to keep in mind the users changing demands in ICT environment, e.g., development of information resources and IT infrastructure, etc.

Keywords: ICT, Library Users, Library Clientele, User Expectation, Library Development, Digital Resources and E-resources.

1. INTRODUCTION

The libraries in ICT era has to satisfy the information needs of its clientele by understanding their actual information needs, their knowledge base, their suaveness about ICT, their current assignment and project etc. After understanding the user's profile, a library can offer him a customized information solution. Based on the capability of the user, library will deliver or disseminate the information through an appropriate communication method, print by hand, digital by email, shareware, social media, web, blogs, etc. The users in Engineering and Technology libraries are not only IT savvy but much more advance as we expected them. Their habits of accessing and finding the information is not limited to the library, they access the online journals, databases, statistical reports, etc. Now a day, advance applications and software's are available to access the internet on the mobile which has made the information very handy. Therefore, the changing approach and expectations of Library Users in ICT Environment has become a focused area of the study.

2. OBJECTIVES OF THE STUDY

The research work aims to study the "Changing Approach and Expectations of Engineering and Technology Institute Library Users in ICT Environment" to evaluate the common views of library

users to fulfill their increasing quality demands of the information and find the better ways to serve them. The major objectives of this study are: -

- Mapping the level of satisfaction of users in respect of print and digital resources.
- Mapping the level of satisfaction in respect of manual and ICT enabled services
- Assess the future planning of collecting information resources and providing services in the light of ICT.
- Reflect critically on these findings and raise the discussions.

3. METHODOLOGY

In order to achieve the objectives, set forth for the study, the following methodology is adopted: Keeping in view the availability of data, the study covers the period: 2004-05 to 2008-2009.

3.2 Review of literature

A preliminary survey of literature related to the topic published in different journals, books, reports, and conference proceedings etc. was conducted.

Secondly, the most relevant articles and documents were selected for detailed and in-depth study. Information available on different web-sites was searched. A review of literature was made with the help of LISA on CD-ROM to get comprehensive information on this topic.

3.3 Survey method using: questionnaire, and personal interview technique

The research study is a survey of selected library users. The methodology adopted for the study consisted of four stages i.e. selection of libraries, designing of questionnaires, collection of data, analysis of data, and preparing of report. A questionnaire meant for library users were designed and distributed for collecting the relevant data.

3.4 Selection Parameters for study, libraries and users

To make the study proper result oriented, there are some limitations have been set forth by the author. The following guidelines were taken into consideration for making the study more focused.

- The leading institutions affiliated to DU and GGSIPU which have their libraries automated have been selected for the study.
- The study is limited to the specific period under which the data was collected and thus, examination conducted only of the time of study.
- The responses through questionnaire have been collected from the users on random basis. The available users in library who happily agreed to participate have been distributed the questionnaires.
- The use of fax, radio, TV and telephone has not been included in the study. The computers and internet has been included only where applicable for resources and services.

- The data obtained is truly indicative of the selected libraries and the responses of the library users are assumed to be sincere and candid.
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Table number – 1 - Name of the selected libraries and Users strength

| Name of the Institute | Abb. | Affiliation | Faculty | Students | Others | Total |
|---|-------|--------------|-------------|--------------|-------------|--------------|
| Bharati Vidyapeeth's College of Engineering | BVCE | GGSSIP | 115 | 2350 | 125 | 2590 |
| Delhi College of Engineering Now Delhi Technological University | DCE | DU | 250 | 3400 | 350 | 4000 |
| Guru Tegh Bahadur Institutes of Technology | GTBIT | GGSSIP | 78 | 1800 | 91 | 1969 |
| H M R Institute of Technology and Management | HMRIT | GGSSIP | 80 | 1800 | 104 | 1984 |
| Indira Gandhi Institute of Technology | IGIT | GGSSIP | 32 | 700 | 25 | 757 |
| Maharaja Agrasen Institute of Technology | MAIT | GGSSIP | 95 | 2500 | 152 | 2747 |
| Maharaja Surajmal Institute of Technology | MSIT | GGSSIP | 62 | 1650 | 120 | 1832 |
| Netaji Subhas Institute of Technology, | NSIT | DU | 150 | 2000 | 200 | 2350 |
| | | Total | 862 | 16200 | 1167 | 18229 |
| | | % | 4.73 | 88.87 | 6.40 | 100 |

The above table shows the strength of library users i.e. faculty, students and other staff members. As overall, the IGIT has the lowest number of users and DCE has the highest number of users. The overall percentage of users group i.e. faculty is 4.73%, students is 88.87% and other staff members are 6.40%.

Table number – 2 - Statement of questionnaire to users.

| User Category | No. of users | Questionnaire distributed | Response received |
|---------------|--------------|---------------------------|-------------------|
| Faculty | 862 | 225 (26.10%) | 25 (11.11%) |
| Students | 16200 | 4200 (25.92%) | 450 (10.71%) |
| Others | 1167 | 410 (35.13%) | 40 (9.75%) |
| Total | 18229 | 4835(26.52%) | 515(10.65%) |

The above table depicts the total number of users, number of questionnaire distributed to users and number of respondents with percentage. The total respondent were 515 (10.65%), which included 25 (11.11%) faculty members, 450 (10.71%) students and 40 (9.75%) other users.

Table number – 3 - Total Number of IT Hardware and Software items added during the period.

| Items | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | Total |
|---------------|---------|---------|---------|---------|---------|------------|
| Computers | 14 | 37 | 83 | 47 | 45 | 226 |
| Printers | 6 | 5 | 13 | 3 | 5 | 32 |
| Scanners | 1 | 5 | 3 | 1 | 1 | 11 |
| Fax | 0 | 1 | 0 | 0 | 0 | 1 |
| CD/DVD writer | 3 | 31 | 40 | 25 | 15 | 114 |
| Servers | 2 | 3 | 4 | 1 | 0 | 10 |
| DVR | 0 | 0 | 1 | 1 | 0 | 2 |
| CCTV Cameras | 0 | 0 | 23 | 12 | 0 | 35 |
| Software | 0 | 0 | 0 | 0 | 0 | 0 |

Table number – 4 - Institutions wise number of IT Hardware and Software items added during 2004-05 to 2008-09.

| Items | BVCE | DCE | GTBIT | HMRIT | IGIT | MAIT | MSIT | NSIT | Total |
|---------------|------|-----|-------|-------|------|------|------|------|------------|
| Computers | 7 | 104 | 15 | 25 | 8 | 28 | 11 | 28 | 226 |
| Printers | 7 | 6 | 4 | 1 | 3 | 2 | 2 | 7 | 32 |
| Scanners | 2 | 2 | 4 | 1 | 1 | 0 | 0 | 1 | 11 |
| Fax | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| CD/DVD writer | 3 | 75 | 6 | 0 | 0 | 28 | 1 | 1 | 114 |
| Servers | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |
| DVR | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| CCTV Cameras | 0 | 23 | 0 | 0 | 0 | 12 | 0 | 0 | 35 |
| Software | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

The table number 3 and 4 shows the quantity of IT Hardware and Software items added during the above period. The computer (83) was the highest item procured during 2006-07 and fax (1) was the lowest item procured during 2005-06. The highest item added was computer (226) and lowest item added was fax (1). The trend reflects that in 2004-05 and 2005-06, the procurement of IT items was increasing, 2006-07 was the peak period and after that it started decreasing. The highest and lowest item procured was computer (104) and fax (1) by DCE. The software was never procured during the period. It shows that all libraries have installed the software before the study period.

Table number – 5 -Libraries procured IT Hardware and Software items.

| Items | Number of libraries procured items | | | | |
|-----------------------|------------------------------------|---------|---------|---------|---------|
| | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 |
| Computers | 7 | 7 | 6 | 7 | 7 |
| Printers | 5 | 3 | 7 | 2 | 4 |
| Scanners | 1 | 4 | 2 | 1 | 1 |
| Fax | 0 | 1 | 0 | 0 | 0 |
| CD/DVD writer | 2 | 2 | 3 | 2 | 2 |
| Servers | 2 | 2 | 4 | 1 | 0 |
| Security System (DVR) | 0 | 0 | 1 | 1 | 0 |
| CCTV Cameras | 0 | 0 | 1 | 1 | 0 |

The table number 5 reveals the number of libraries purchased the IT items during the period. The highest number of libraries was seven which procured highest item i.e. computers during the period except 2006-07. Another highest procured item was printer by seven libraries during 2006-07. The lowest number of libraries was one which had procured item i.e. fax during the above period.

Table number – 6 - Name of Internet Service Provider and Bandwidth of connectivity year wise.

| Institute | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 |
|-----------|-----------------------------------|--|--|---|---|
| BVCE | . | . | . | MTNL -2 MB | MTNL -2 MB |
| DCE | MTNL - 1 MB, Reliance - 512 KB | ERNET - 6 MB, MTNL - 1 MB, Reliance - 512 KB | ERNET - 6 MB, MTNL - 1 MB, Reliance - 512 KB | Airtel - 4 MB, ERNET - 6MB, MTNL - 1 MB, Tata Indicom - 2 MB | Airtel - 4 MB, ERNET - 6 MB, MTNL - 1 MB, Tata Indicom - 2 MB |
| GTBIT | Radiolink-4 MB | Radiolink - 4 MB | Radiolink -4 MB | Radiolink-4 MB | Radiolink - 4 MB |
| HMRIT | MTNL - 264 KB, Sify - 264 KB | MTNL - 264 KB, Sify - 264 KB | MTNL - 264 KB, Sify - 264 KB | MTNL - 264 KB, Sify - 264 KB | MTNL - 264 KB, Sify - 264 KB |
| IGIT | . | . | MTNL -10 MB | MTNL -10 MB | MTNL -10 MB |
| MAIT | . | . | Tata Indicom-125 KB | Tata Indicom – 125 KB | Tata Indicom - 125 KB |
| MSIT | . | . | Airtel - 4 MB | Airtel - 4 MB | Airtel - 4 MB |
| NSIT | BSNL - 1 GB | . | . | Radiolink - 4 MB | Radiolink - 4 MB |

The table number 6 depicts the names of Internet Service Provider and bandwidth of connectivity subscribed by the libraries. The highest bandwidth of connectivity was (13 MB) by DCE during 2007-08 and 2008-09 and the lowest bandwidth of connectivity was (125 KB) by MAIT from 2006-07 to 2008-09. No connection was subscribed by i.e. BVCE from 2004-05 to 2006-07, GTBIT from 2004-05 to 2005-06 and 2008-09, IGIT, MAIT and MSIT from 2004-05 to 2005-06 and NSIT from 2005-06 to 2006-07. Only two libraries DCE and HMRIT had continuity of internet subscription from 2004-05 to 2008-09.

Table number – 7 – Addition in print resources.

| Institute | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | Total Added |
|-----------|---------|---------|---------|---------|---------|-------------|
| BVCE | 1580 | 1800 | 2100 | 2350 | 2600 | 10430 |
| DCE | 5300 | 6950 | 9353 | 11544 | 6625 | 39772 |
| GTBIT | 1200 | 1350 | 1420 | 1530 | 1680 | 7180 |
| HMRIT | 560 | 640 | 690 | 750 | 870 | 3510 |
| IGIT | 2400 | 1900 | 1500 | 1890 | 2650 | 10340 |
| MAIT | 1200 | 1400 | 1470 | 1560 | 1890 | 7520 |
| MSIT | 510 | 540 | 679 | 530 | 500 | 2759 |
| NSIT | 2000 | 2400 | 2900 | 3200 | 3050 | 13550 |
| Average | 1843.75 | 2122.5 | 2514 | 2919.25 | 2483.13 | 11882.63 |
| Total | 14750 | 16980 | 20112 | 23354 | 19865 | 95061 |

The table shows annual growth of print documents in library. There is a definite increasing trend in print collection. The addition of documents varies year to year and related to the library budget. The highest document added was 23354 during 2007-08 and lowest added was 14750 during 2004-05. The highest documents added by DCE (11544) during 2007-08 and lowest added by MSIT (500) during 2008-09. The average addition during the period is 11883 resources. The overall highest documents added by DCE (39772) and the lowest added by MSIT (2759). The total document added during the period was 95061 by all the libraries.

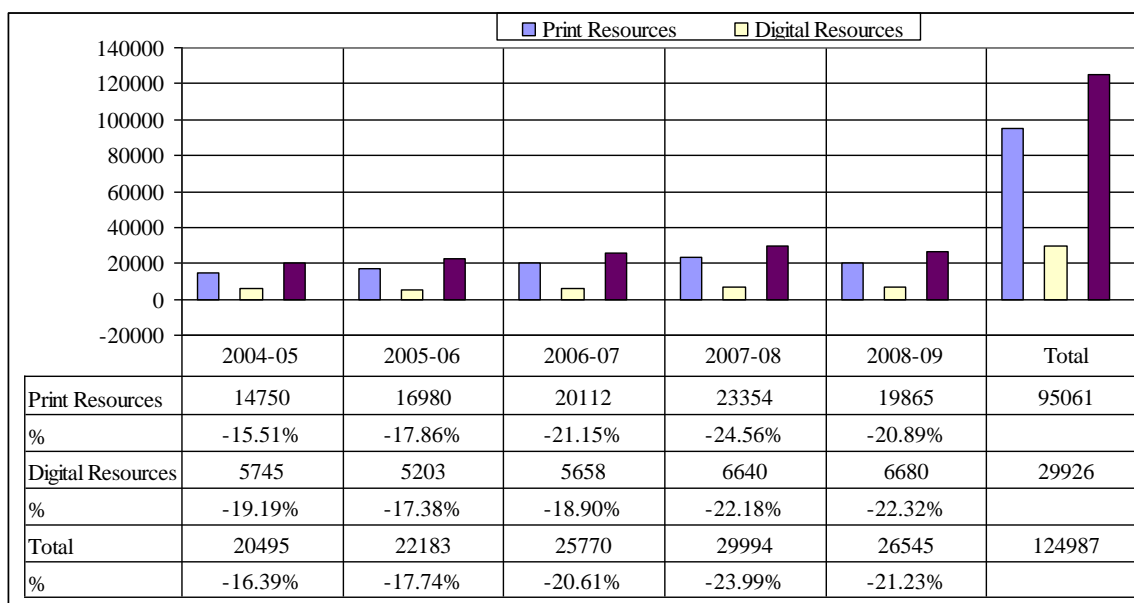
Table number – 8 - Addition in digital resources.

| Institute | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | Total Added |
|-----------|--------------|--------------|--------------|--------------|--------------|-------------|
| BVCE | 450 | 495 | 530 | 580 | 630 | 2685 |
| DCE | 3200 | 2300 | 1800 | 2150 | 2250 | 11700 |
| GTBIT | 350 | 460 | 560 | 590 | 650 | 2610 |
| HMRIT | 430 | 455 | 478 | 510 | 530 | 2403 |
| IGIT | 120 | 180 | 560 | 780 | 850 | 2490 |
| MAIT | 145 | 230 | 460 | 690 | 750 | 2275 |
| MSIT | 540 | 568 | 680 | 700 | 720 | 3208 |
| NSIT | 510 | 515 | 590 | 640 | 300 | 2555 |
| Average | 718.13 | 650.38 | 707.25 | 830 | 835 | 3740.75 |
| Total | 5745(19.19%) | 5203(17.38%) | 5658(18.90%) | 6640(22.18%) | 6680(22.32%) | 29926 |

The table shows annual growth of e-resources during the period. There is a definite increasing trend in development is seen. The highest resources added was 6680 during 2008-09 and lowest added was 5203 during 2005-06. The highest documents added by DCE (3200) during 2005-06 and lowest added by IGIT (120) during 2004-05.

The average addition during the period is 3741 resources. The overall highest documents added by DCE (11700) and the lowest added by MAIT (2275). The total document added during the period was 29926 by all the libraries.

Table number – 9 and Graph 1 – Comparative statement on print and digital resources addition.



The table and graph number 9 shows that the number of print and digital resources has increased from (15.51%) to (20.89%) and (19.19%) to (22.32%) respectively. Overall figure shows a

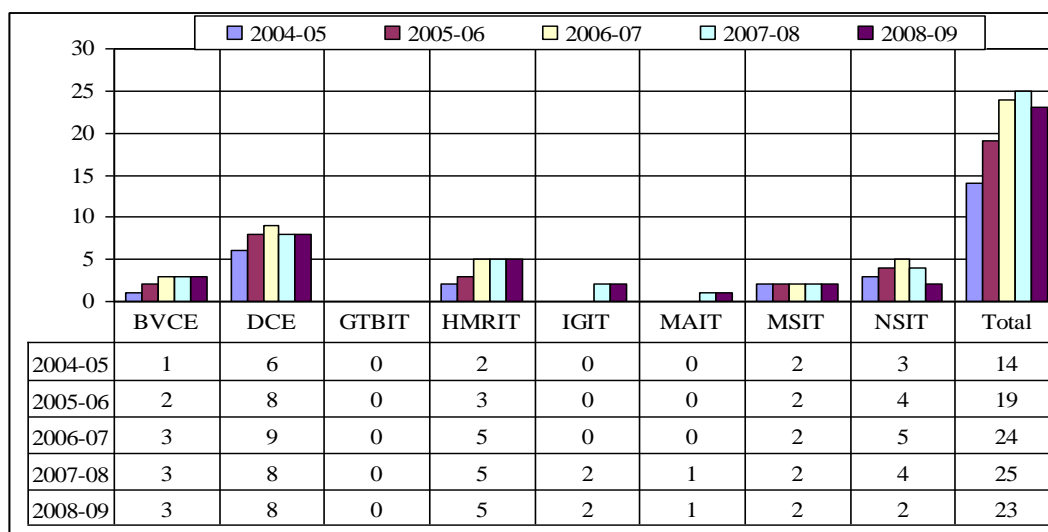
definite increasing trend in resources collection. The overall growth in both resources have been observed from (16.39%) to (21.23%) during the period.

Table number – 10 – Subscription of online resources.

| Online resources | Number of libraries subscribed | | | | | |
|---------------------------------|--------------------------------|---------|---------|---------|---------|-------|
| | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | Total |
| ABI-Info Complete | 0 | 0 | 1 | 0 | 0 | 1 |
| AccessEngineering (McGraw Hill) | 0 | 0 | 1 | 1 | 1 | 3 |
| ACM | 0 | 0 | 2 | 2 | 2 | 6 |
| ASCE | 1 | 1 | 2 | 2 | 2 | 8 |
| ASME | 2 | 3 | 3 | 3 | 2 | 13 |
| ASTM Standards and Journals | 1 | 1 | 1 | 1 | 1 | 5 |
| BIS Indian Standards | 1 | 1 | 1 | 1 | 1 | 5 |
| Emerald | 0 | 1 | 1 | 1 | 1 | 4 |
| IEL Online | 3 | 5 | 5 | 7 | 7 | 27 |
| INSPEC | 1 | 1 | 1 | 1 | 0 | 4 |
| Science Direct | 0 | 1 | 1 | 1 | 1 | 4 |
| SpringerLink | 5 | 5 | 5 | 5 | 5 | 25 |

The table number 10 reveals the number of libraries has subscribed the e-resources. The IEL online was the most subscribed e-resource (7 each year) during 2007-08 to 2008-09 and ABI-Info complete was the least subscribed (1) during the period of 2006-07. The SpringerLink have maintained continue subscription (5 each year). Overall, IEL Online was most subscribed e-resource (27) and ABI-Info Complete was the least subscribed e-resource during the period.

Table number –11 and graph – 2 - E-resources subscription.



The table 11 and graph reveals the number of online resources subscribed. The DCE has subscribed highest number of e-resources (9) during the period of 2006-07 and MAIT has subscribed only one online resource during the period of 2007-08 and 2008-09.

The maximum numbers of online resources subscribed were 25 during 2007-08 and minimum numbers of online resources subscribed were 14 during 2004-05. The GTBIT have not provided any record about subscription of online resources.

4 ANALYSIS AND INTERPRETATION OF DATA

After receiving the response of second questionnaire, the data have been presented in tabular form, and further supplemented by graphs wherever necessary. The data have been analyzed, using excel statistical techniques viz. for calculating average, percentage averages, and ranked them in increasing or decreasing order and comparative statements were prepared wherever required.

Table number – 12 - Purpose of Library Visit

| Purpose | Faculty | Students | Others | Total |
|--------------------------------|----------|--------------|------------|--------------|
| Circulation of Books | 7 (28%) | 420 (93.33%) | 2(8%) | 429 (83.30%) |
| Internet Browsing | 6 (24%) | 350 (77.77%) | 25 (62.5%) | 381 (73.98%) |
| Access E-resources | 12 (48%) | 275 (61.11%) | 6 (15%) | 293 (56.89%) |
| Class Room Learning / Teaching | 18 (72%) | 186 (41.33%) | 3 (7.5%) | 207 (40.19%) |
| Newspapers Reading | 4 (16%) | 50 (11.11%) | 35 (87.5%) | 89 (17.28%) |
| Professional Update | 12 (48%) | 12 (2.66%) | 4 (10%) | 28 (5.44%) |
| Research Purpose | 5 (20%) | 10 (2.22%) | 0 (0%) | 15 (2.91%) |

The table number 12 highlights the purpose of library visit by respondents. The purpose of visit has been arranged in descending order. The maximum respondents visit the library for borrowing and returning of documents (83.30%), followed by internet browsing (73.98%). The least purpose of visit by all users group is research purpose by 2.91% of the total respondents. The students are the maximum number from different group of respondents; hence they visit the library most.

Table number –13 - Frequency of Library visit.

| User Group | Daily | Weekly | Monthly | Occasionally | Never |
|--------------|---------------------|---------------------|-------------------|------------------|---------------|
| Faculty | 8 (32%) | 12 (48%) | 3 (12%) | 2 (8%) | 0 (0%) |
| Students | 265 (68.88%) | 155 (34.44%) | 25 (5.55%) | 5 (1.11%) | 0 (0%) |
| Others | 12 (30%) | 24 (60%) | 3 (7.5%) | 1 (2.5%) | 0 (0%) |
| Total | 285 (55.33%) | 191 (37.08%) | 31 (6.01%) | 8 (1.55%) | 0 (0%) |

A total of 265 (68.88%) student respondents visit the library daily, followed by 8 (32%) faculty. The different group of respondents shows the different numbers showing a lot of variation. No respondent of any category was found who had never visited the library.

Table number – 14 - Usefulness of ICT enabled facilities/ services.

| Facilities/ Services | Most useful | Very useful | Useful | Less useful | useless | Mean |
|----------------------|-------------|-------------|--------|-------------|---------|------|
|----------------------|-------------|-------------|--------|-------------|---------|------|

| | | | | | | |
|-------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|------|
| Access to E-resources | 120 (23.30%) | 205 (39.80%) | 155 (30.09%) | 25 (4.85%) | 10 (1.9%) | 3.78 |
| OPAC | 92 (17.86%) | 228 (44.27%) | 145 (26.16%) | 22 (4.27%) | 28 (5.3%) | 3.65 |
| Internet Browsing | 105 (20.38%) | 195 (37.86%) | 150 (29.12%) | 45 (8.73%) | 20 (3.8%) | 3.62 |
| Word Processing Work | 105 (20.39%) | 132 (25.63%) | 145 (28.15%) | 85 (16.50%) | 48 (9%) | 3.32 |
| Digital Library | 3 (0.58%) | 10 (1.94%) | 50 (9.70%) | 308 (59.80%) | 144 (27.1%) | 1.87 |
| Intranet / Campus wide Access | 11 (2.13%) | 20 (3.88%) | 25 (4.85%) | 280 (54.36%) | 179 (33.6%) | 1.84 |
| Total | 436 (14.11%) | 790 (25.57%) | 670 (21.68%) | 765 (24.76%) | 429 (13.88%) | |

While surveying the users the ‘Usefulness’ and rating of different library facilities / services were asked, the ‘Most useful’ service is Access to e-resources (23.20%) with over all 3.78 mean, followed by OPAC is rated as ‘Very useful’ (44.27%) with overall mean 3.65 mean. The least useful service rated by users group is intranet / campus wide access with 1.84 mean, followed by digital library. The overall ICT based facilities were ‘Very useful’ by 790 (25.57%) respondents. The usefulness of ICT enabled services has been arranged by mean value in decreasing order.

Table number –15 - Users opinion regarding availability of E-Resources

| User Group | Satisfied | Not Satisfied |
|-------------------|---------------------|----------------------|
| Faculty | 13 (52%) | 12 (48%) |
| Students | 279 (62%) | 171 (38%) |
| Others | 16 (40%) | 24 (60%) |
| Total | 308 (59.80%) | 207 (40.20%) |

The table number 15 reflects the opinions regarding the E-resources availability in the library. A total of 308 (59.80%) respondents were satisfied, out of which 279 (62%) students, 13 (52%) faculty and 16 (40%) other staff. Out of total of 207 (40.20%) respondents, 171 (38%) students, 24 (60%) other staff and faculty members were not satisfied. The respondent satisfaction rate for availability of E-resources is 308 (59.80%) which is less than 441 (85.63%) for ICT Infrastructure availability.

Table number – 16 - Comparative statement of Print and Electronic Resources usage.

| User Group | Print Resources | | | Electronic Resources | | | Paired Samples Test | | | | |
|--------------|---------------------|---------------------|-----------------|----------------------|--------------------|-------------------|----------------------|----------------------|--------|-----|----------------|
| | 3 | 2 | 1 | 3 | 2 | 1 | Mean for P-Resources | Mean for E-resources | t | df | Sig.(2-tailed) |
| Faculty | 14 (56%) | 11 (40%) | 0 (0%) | 18 (72%) | 7 (28%) | 0 (0%) | 2.58 | 2.65 | -1.906 | 514 | .057 |
| Students | 263 (58.44) | 187 (41.55%) | 0 (0%) | 345(76.66%) | 72 (16%) | 33 (7.33%) | | | | | |
| Others | 23 (57.5%) | 17 (42.5%) | 0 (0%) | 16 (40%) | 13 (32.5%) | 11 (27.5%) | | | | | |
| Total | 300 (58.25%) | 215 (41.75%) | 0 (0.0%) | 379(73.59%) | 92 (17.86%) | 44 (8.54%) | | | | | |

* 3 – Use very much, 2 – Use some times, 1 – Never use

The table number 16 reflects the opinions of respondents regarding usage of resources and based upon a comparative statement of Print and Electronic Resources usage prepared and presented. The students made comment ‘Use very much’ 263 (58.44) and 345 (76.66%) for Print and Electronic resources respectively which is the highest number of different respondents group. The overall 300 (58.25%) and, 379 (73.59%) respondents made comment ‘Use very much’ for Print and Electronic resources respectively but 215 (41.75%) and, 92 (17.86%) respondents made comment ‘Use some times’ for Print and Electronic resources respectively. No user group has commented ‘Never use’ for Print resources but in respect e-resources; the students and other have commented 33 (7.33%) and 11 (27.5%) respectively for the same.

Paired sample t-test was conducted to compare the difference between Print and E-resources usage. The result showed that there was a significant difference between the two group’s usages. The $t = -1.906$, $P = .057$ (at $P < 0.10$) and the degree of freedom (df) are 514. The mean difference in print 2.58 and e-resources 2.65 proves that e-resources are having higher usage than print.

Table number – 17 - Resources preference

| User Group | Print Resources | | | | | Electronic Resources | | | | | Paired Samples Test | | | | | |
|--------------|-----------------|--------------|--------------|--------------|------------|----------------------|--------------|--------------|------------|------------|---------------------|----------------------|----------------------|--------|-----|---------------|
| | Rating* | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 | Mean for P-Resources | Mean for E-resources | t | df | ig.(2-tailed) |
| Faculty | | 8 (32%) | 9 (36%) | 4 (16%) | 4 (16%) | 0(0%) | 11 (44%) | 9 (36%) | 3 (12%) | 2 (8%) | 0 (0%) | 4.05 | 4.48 | -8.141 | 514 | .000 |
| Students | | 178 (39.55%) | 130 (28.88%) | 132 (29.33%) | 10 (2.22%) | 0 (0%) | 275 (61.11%) | 165 (36.66%) | 8 (1.77%) | 2 (0.44%) | 0 (0%) | | | | | |
| Others | | 18 (45%) | 12 (30%) | 7 (17.5%) | 3 (7.5%) | 0 (0%) | 8 (20%) | 13 (32.5%) | 10 (25%) | 7 (17.5%) | 2 (5%) | | | | | |
| Total | | 204 (39.80%) | 151 (29.32%) | 143 (27.76%) | 17 (3.30%) | 0 (0%) | 294 (57.08%) | 187 (36.31%) | 21 (4.07%) | 11 (2.13%) | 2(0.38%) | | | | | |

* 5 – Like very much, 4 – Like somewhat, 3 – Natural, 2 – dislike somewhat, 1- Dislike very much, (0) –Not Applicable

The table number 17 reflects the opinions of respondents regarding preference of resources. Based on the comparative statement of print and electronic resources usage, it is presented in tabular form. A total of 204 (39.80%) respondents of ‘Like very much’ for print resources, the students 178 (39.55%) were the highest users group followed by other staff 18 (45%). Out of total 294 (57.08%) respondents of ‘Like very much’ for e-resources, the students 275 (61.11%) were highest users group followed by faculty 11 (44%). The overall and respondents made comment ‘Like somewhat’ 151 (29.32%) and 187 (36.31%) for print and e-resources respectively. Paired sample t-test was conducted to compare the difference between Print and E-resources preferences. The result showed that there was a significant difference between the two groups’ preferences. The t = -8.141, P = .000 (at P< 0.05) and the degree of freedom (df) are 514. The mean difference in print 4.05 and e-resources 4.48 proves that e-resources are having higher preference than print.

Table number – 18 – Users services satisfaction level

| Services | Manual Operated | | | | | ICT Enabled | | | | | Paired Samples Test | | | | |
|----------------------|---------------------|----------------------|----------------------|---------------------|---------------------|----------------------|----------------------|----------------------|--------------------|--------------------|---------------------|----------------------|--------|-----|----------------|
| | 5 | 4 | 3 | 2 | 1 | 5 | 4 | 3 | 2 | 1 | Mean for Manual | Mean for ICT Enabled | t | df | Sig.(2-tailed) |
| Circulation service | 78 (15.14%) | 143 (27.76%) | 191 (37.08%) | 57 (11.06%) | 46 (8.93%) | 127 (24.66%) | 153 (29.70%) | 157 (30.48%) | 33 (6.40%) | 45 (8.73%) | 3.29 | 3.55 | 3.544 | 514 | .000 |
| Users education | 87 (16.89%) | 156 (30.29%) | 191 (37.08%) | 38 (7.37%) | 43 (8.34%) | 59 (11.45%) | 117 (22.71%) | 214 (41.55%) | 63 (12.23%) | 62 (12.03%) | 3.40 | 3.09 | 2.284 | 514 | .000 |
| Access to resources | 96 (18.64%) | 152 (29.51%) | 207 (40.19%) | 23 (4.46%) | 37 (7.18%) | 198 (38.44%) | 211 (40.97%) | 54 (10.48%) | 21 (4.07%) | 31 (6.01%) | 3.48 | 4.02 | 3.076 | 514 | .000 |
| RRS | 191 (37.08%) | 177 (34.36%) | 87 (16.89%) | 29 (5.63%) | 31 (6.01%) | 152 (29.51%) | 141 (27.37%) | 104 (20.19%) | 75 (14.56%) | 43 (8.34%) | 3.91 | 3.55 | 2.765 | 514 | .000 |
| ILL | 98 (19.02%) | 107 (20.77%) | 156 (30.29%) | 81 (15.72%) | 73 (14.17%) | 143 (27.76%) | 198 (38.44%) | 101 (19.61%) | 41 (7.96%) | 32 (6.21%) | 3.15 | 3.74 | 7.737 | 514 | .000 |
| DDS | 32 (6.21%) | 45 (8.73%) | 110 (21.35%) | 183 (35.53%) | 145 (28.15%) | 271 (52.62%) | 184 (35.72%) | 21 (4.07%) | 27 (5.24%) | 12 (2.33%) | 2.29 | 4.31 | 30.544 | 514 | .000 |
| Bibliography service | 37 (7.18%) | 56 (10.87%) | 136 (26.40%) | 165 (32.03%) | 121 (23.49%) | 243 (47.18%) | 171 (33.20%) | 79 (15.33%) | 17 (3.30%) | 5 (0.97%) | 2.46 | 4.22 | 27.129 | 514 | .000 |
| CAS | 76 (14.75%) | 89 (17.28%) | 109 (21.16%) | 135 (26.21%) | 106 (20.58%) | 143 (27.76%) | 132 (25.63%) | 146 (28.34%) | 53 (10.29%) | 41 (7.96%) | 2.79 | 3.55 | 9.400 | 514 | .000 |
| SDI | 58 (11.26%) | 74 (14.36%) | 132 (25.63%) | 142 (27.57%) | 109 (21.16%) | 134 (26.01%) | 152 (29.51%) | 138 (26.79%) | 52 (10.09%) | 39 (7.57%) | 2.67 | 3.56 | 1.909 | 514 | .000 |
| Catalogue search | 66 (12.81%) | 113 (21.94%) | 153 (29.70%) | 110 (21.35%) | 73 (14.17%) | 134 (26.01%) | 175 (33.98%) | 161 (31.26%) | 24 (4.66%) | 21 (4.07%) | 2.98 | 3.73 | 10.662 | 514 | .000 |
| Total | 819 (15.19%) | 1112 (21.59%) | 1472 (28.58%) | 963 (18.69%) | 784 (15.22%) | 1604 (31.14%) | 1634 (31.72%) | 1175 (22.88%) | 406 (7.88%) | 331 (6.42%) | | | | | |

* 5 – Highly satisfied, 4 – Satisfied, 3 – Average, 2 – Less satisfied, 1 - Not satisfied

The table number 18 reflects the opinions of respondents regarding satisfaction level of library services. Based on users response, a comparative statement of manual operated and ICT enabled services is presented. While surveying the rating by all group of respondents as 'Highly satisfied', the 'RRS – Reference and Referral Service' operated manually was 191 (37.08%) and 'DDS – Document delivery' ICT enabled was 271 (52.62%) respectively, followed by "ILL" 98 (19.02%) and Bibliography service 243 (47.18%) in operated manually and ICT enabled services respectively. The overall rating for manually operated and ICT enabled services is least for 'Not satisfied' 784 (15.22%) and 331 (6.42%) respectively. On the other side overall rating 'Highly satisfied' is 819 (15.19%) and 1604 (31.14%) for manually operated and ICT enabled services respectively.

Paired sample t-test was conducted to compare the difference between Manual and ICT enabled services satisfaction. The result showed that there was a significant difference between the satisfactions. The $t = -3.544$ for Circulation, 4.284 for Users education, -8.076 for Access to resources, 4.765 for RRS, - 7.737 for ILL, -30.544 for DDS, -27.129 for Bibliography, -9.400 for CAS, -11.909 for SDI, and -10.662 for Catalogue search, P for each = .000 (at $P < 0.05$) and the degree of freedom (df) were 514 for each. The mean difference for Manual operated and ICT enabled services where 3.29 and 3.55 for Circulation, 3.40 and 3.09 for Users education, 3.48 and 4.02 for Access to resources, 3.91 and 3.55 for RRS, 3.15 and 3.74 for ILL, 2.29 and 4.31 for DDS, 2.46 and 4.22 for Bibliography, 2.79 and 3.55 for CAS, 2.67 and 3.56 for SDI and 2.98 and 3.73 for Catalogue search proves that ICT enabled services are more satisfying than the Manual operated. Out of total ten (10) services, eight (8) ICT enabled services are more satisfying than manual two (2) (i.e. Users education and RRS).

Graph number – 3 - Users services satisfaction level

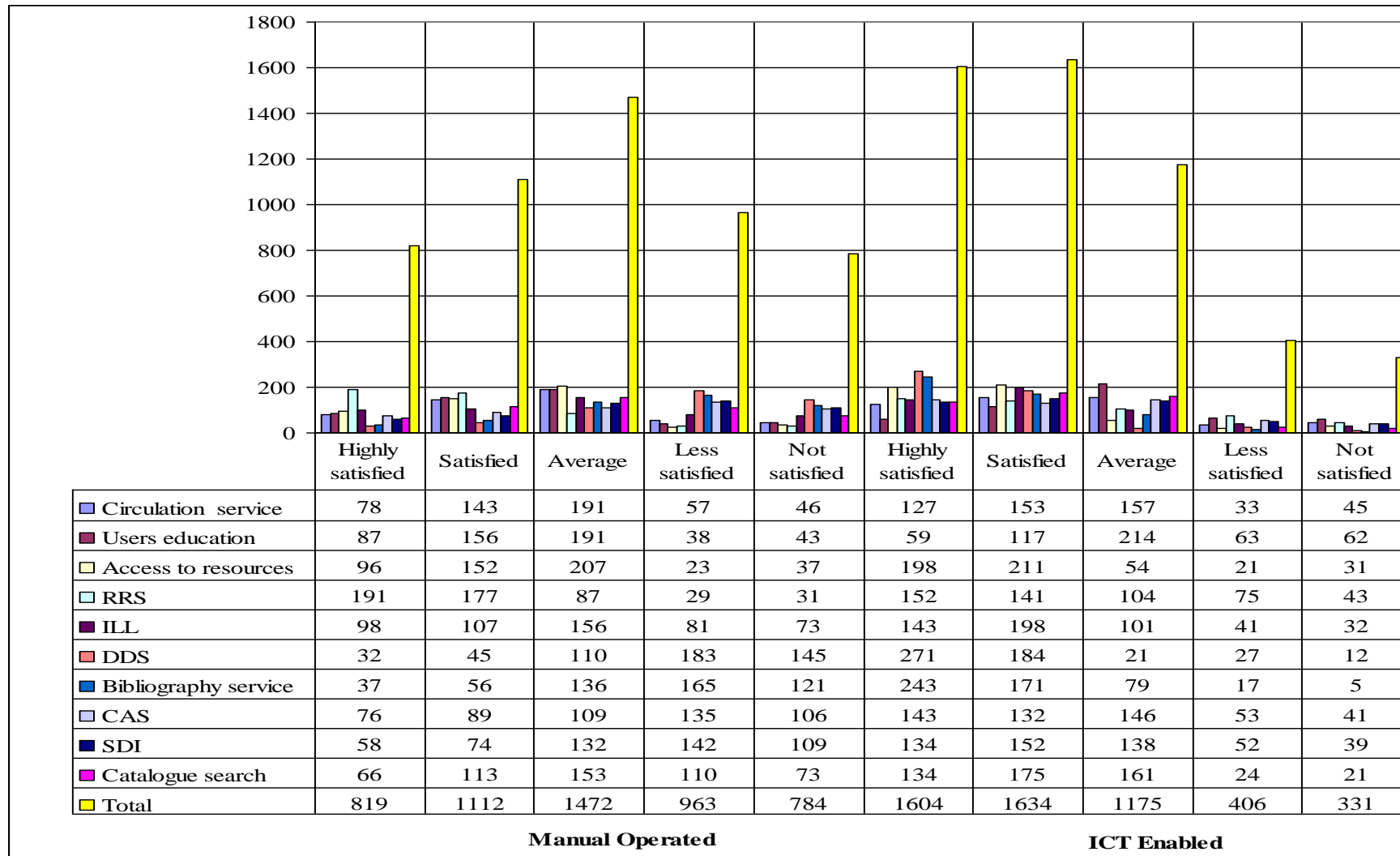


Table number – 19 - Library future plans for growth and development

| Areas of development | Library future plans for growth and development. | | | | | |
|---|--|----------------------|---------------------|--------------------|-------------------|------|
| Rating* | 5 | 4 | 3 | 2 | 1 | Mean |
| Increase the number of ICT enabled services | 242 (46.99%) | 228 (44.27%) | 26 (5.04%) | 11 (2.13%) | 8 (8.55%) | 4.33 |
| More ICT savvy staff, user education | 198 (38.44%) | 217 (42.13%) | 82 (15.92%) | 13 (2.52%) | 5 (0.97%) | 4.15 |
| Increase the number of e-resources | 178 (34.56%) | 255 (49.51%) | 64 (8.93%) | 12 (2.33%) | 6 (1.16%) | 4.14 |
| Develop / advancement in digital library | 175 (33.98%) | 193 (27.47%) | 112 (21.74%) | 24 (4.66%) | 11 (2.13%) | 3.97 |
| Develop / advancement in library webpage | 169 (32.81%) | 188 (36.50%) | 109 (21.16%) | 34 (6.60%) | 15 (2.91%) | 3.90 |
| More hardware, software, internet speed | 147 (28.54%) | 175 (33.98%) | 156 (30.29%) | 27 (5.24%) | 10 (1.94%) | 3.82 |
| Total | 109 (35.89%) | 1256 (40.65%) | 549 (17.77%) | 121 (3.92%) | 55 (1.78%) | |

5 - Very high, 4 – High, 3 – Average, 2 – Low, 1 - Not at all

The user groups were also asked regarding the future planning in respect of ICT based developments. The table 19 reflects the opinions of respondents regarding their preferences; the 242 (46.99%) respondents rated ‘Very high’ for ‘Increase the number of ICT enabled services’ followed by More ICT savvy staff, user education 198 (38.44%). The 255 (49.51%) respondents rated ‘High’ for ‘Increase the number of e-resources’. The overall 1109 (35.89%) and 1256 (40.65%) respondents rated ‘Very high’ and ‘High’ respectively for ICT enabled future growth and development of library.

The mean for future library plans especially in ICT growth and development rating preference by all users group were for Increase the number of ICT enabled services (with mean 4.33). The areas of growth and development have been arranged by mean value in decreasing order in above table.

5 Conclusion and Findings

As per the responses from the library users during the period of 2004-05 to 2008-09 were analyzed. Based on the result, the data revealed the following.

1. The usage of print resources was highest in 2004-05 and decline trend observed from 2004-05 to 2008-09. Overall, libraries observed that the print resources are having more usage than the e-resources. But the increasing trend in e-resources usage is seen.
2. The usage of digital resources was least in 2004-05 but increase trend observed from 2005-06 to 2008-09.
3. As overall, the ICT enabled services are rated higher than manually operated services in respect of users' satisfaction.
4. The assessment of user's needs and satisfaction/ expectations in the contexts of growth and development of libraries is an important component thus the following facts came out to enlighten the research.
 - a) The users (85.63%) are satisfied with the availability of ICT Infrastructure.
 - b) The users (59.80%) are satisfied with the availability of E-Resources.
5. The users usually prefer the growth in the form of ICT enabled services and strengthening of ICT infrastructure.

6. Suggestions and Recommendations

1. A national government agency should be established in India for free launcher scholars and researchers. The agency should set up the standards for research and development activities and provide the funds to research projects. The agency should provide a single counter service and act as a coordinator for all research proposals and projects.
2. A national research knowledge resource centre (RKRC) needs to be established to facilitate research information services. A network of such centres should be setup in the same line of public library system in India. Or some advance libraries should be identified to convert into a knowledge resource centre and librarian should be designated as research resource officer. The engineering and technology graduates should be provided the facility of RKRC to continue their research in their areas of interest.
3. The application of ICT have given opportunity to spread information in new paradigm and the opportunity should be utilized, i.e., many new web applications and internet tools viz. Subject or Information Gateways, News groups, Discussion forums, Listserv, E-mail forum, Message board or Bulletin boards, posting and updating of news, views and sharing professional information, Video conferences, chats, voice over IP, p2p networks, Instant Messaging, Pod and vodcasting,

Streaming Media, Blogging, Tagging, Search, Social book marking, SMS Enquiry Service, Social networking, wikis, and RSS.

4. It has been observed that the usage of digital resources should be enhanced more and users group i.e. students, faculty and other staff should be trained to utilize the resources maximum. The orientation and training programmes should be organized for them on regular and periodic basis.
5. The opinions observed on the future growth and development of library that there is heavy demand for digital resources and ICT based information services. It is high time for libraries to identify the users changing needs and accordingly develop the digital collection and initiate to customize the ICT enabled services.
6. The ICT has multiplied the speed communication and online storage and access of information. To exploit the ICT advantages, the collection of one library resources can be utilized by other similar libraries. The mutual understanding of sharing information resources should be developed for better finance management, manpower and better services to the library users.
7. The LIS professionals should work with the faculty members and have to participate in education and learning programmes of the organization. The students should be encouraged designing their assignments and projects based on the information resources available with their library. The participation of faculty, student and librarian can only make the maximum utilization of money spent on subscription of resources.

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