# Use of ICT Based Resources and Services by the Faculty members of Engineering Colleges in Mysore Region: A study

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Abstract

*The present study examines the use of electronic information resources, place of access to e-resources, the extent of use of electronic information resources, the extent of use of electronic information services, learn the skill of using electronic information resources and services, the purpose of use of electronic journals, awareness of VTU-Consortium, Frequency of Use of VTU-Consortium for Accessing E-Resources, benefits of the use of e-resources, problems faced while accessing e-resources and problems associated with utilization of ICT applications by the faculty members of engineering colleges in Mysore region. For this purpose, the researchers prepared a well-structured questionnaire as a tool for data collection. The article provides suggestions to overcome the hindrances faced while providing ICT enabled library resources and services.*

Keywords

E-Resources; ICT Literacy; ICT Literacy; Competencies; Retrieval Techniques; Search Strategies;

Electronic access

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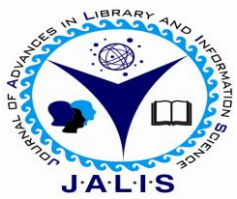


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## 1. Introduction

Information and Communication Technology (ICT) is a diverse set of technological tools and resources used to communicate, create, disseminate, store, and manage information. As new learning concepts have evolved, faculty members are expected to facilitate learning and make it meaningful to individual learners rather than provide knowledge and skills. Modern developments of innovative technologies have provided new possibilities for teaching professions, but at the same time have placed more demands on teachers to learn how to use these new technologies in their teaching. The library and information centers are providing ICT-based resources and services to satisfy their users' diverse information needs. However, these resources and services are not fully utilized. Underutilization of these resources and services has been a cause of concern to librarians worldwide. The use of ICT has become increasingly important in engineering college libraries. The libraries are switching over to ICT based resources and services at an accelerated pace. It has opened new avenues, like online learning, e-education, e-journal, CD-ROM Database, e-books, web-based resources and services etc. The present study was conducted on the use of ICT-based resources and services by the faculty members of engineering colleges under the Mysore region.

## 2. Review of Literature

Many similar studies related to the topic have been reviewed, and the literature review gives a broader outlook. Some of the important reviews are presented below**.** Haneefa (2007) presented a study on using ICT-based resources and services in special libraries in Kerala, India. The largest percentage of the users used the e-mail service. WWW was being used by 60 percent of the library users. Many users were not satisfied with applying ICT in the libraries and indicated 'inadequate ICT infrastructure' as their reason for dissatisfaction. Users proposed a variety of measures for formal orientation and training in ICT based resources and services. Moorthy and Karisiddappa (2001) conducted a study on information infrastructure and electronic media in Indian libraries. They found that many libraries were subscribing to CD-ROM databases and were willing to migrate to online journals to satisfy the demands of their users. Kumar and Kumbar (2015) conducted a study on autonomous engineering institutions affiliated to Visvesvaraya Technological University in Karnataka to examine the factors that affect the optimum utilization of electronic information resources and search patterns. The study mainly focused

on using different types of electronic information resources by the faculty, source of awareness, learning to use, problems faced, the purpose of use, preferred search engines and search methods for effective retrieval of electronic information resources. The members of the faculty are well aware of existing resources and library services. But they need training in the area of information search and retrieval in the web environment.Awuor, Rabah and Maake (2013) found in their study that the adoption of ICT has revolutionized service provision in libraries and their general information management systems. This has transformed most digital services: e-database, e-catalogs, e-library and archiving technology like DSpace. Today, within the developing world, most libraries are moving towards transforming their existing traditional library services to digital systems - allowing them to tap and benefit from the vast advantages of ICT, for example, operation costs reduction, increased efficiency, and on-the-fly availability of information. Even with numerous such benefits, most Higher Institutions of Learning in developing countries still lag on adopting ICT in their library services. Seena and Pillai (2014) conducted a study to investigate the awareness, skill and attitude towards Information and Communication Technologies (ICT) among library professionals in Kerala University Library, Thiruvananthapuram and revealed that the library professionals in the Kerala University library system have a relatively average level skills in various ICT related tasks in libraries. LibSys software was more used in libraries. A good number of professionals indicated that the primary constraint in applying ICT in libraries is inadequate training in ICT applications. All the professionals expressed a positive attitude towards the application of ICT in libraries.

## 3. Objectives of the Study

The objectives behind conducting the present study are:

- To investigate the Information and Communication Technology literacy competencies among thefaculty members of engineering colleges.
- To study the use of ICT based resources and services by the members of the faculty.
- To find out the purpose of the use of e-resources and services.
- To know the extent of using electronic information resources and services by faculty membersof engineering colleges.
- To identify and analyze the specific factors that hindered the use of ICT based resources and services.

## 4. Methodology

The study's scope is restricted to use of ICT based resources and services by the faculty members of Engineering Colleges in Mysore Region. At present Mysore region has a total of 60 engineering collegesaffiliated to VTU. A total of 44 engineering colleges are covered in this study, which are established before the year 2010. The colleges were also selected based on their good ICT infrastructure and also which provide a large amount of ICT enabled information resources and services. The survey method was adopted using questionnaire as a tool for data collection. A structured questionnaire was designed and distributed among faculty members of engineering colleges in the Mysore region. Out of 1475 questionnaires distributed among faculty members, 1224 filled-in questionnaires were received back, amounting to 82.98%. The questionnaire method, interview schedule and observation method were also used to collect required information as a supplement to the questionnaire method. The data collected has been analyzed and interpreted using simple percentage techniques.

## 5. Data Analysis

The data was collected by different methods were analyzed and interpreted and the same is presented in the following tables.

### 5.1. Designation and Gender Wise Distribution

The designation and gender-wise distribution of faculty members in Engineering Colleges has been summarized in Table-1. The data depicts that a very high number of faculty 992 (81.04%) are 'Assistant Professors', followed by 159 (12.99%) 'Associate Professors' and 73(05.96%) are 'Professors'.

**Table-1:** Designation and Gender Wise Distribution of Questionnaire

| Designation | Male (N=786) | Female (N=438) | Total (N=1224) |
|---|---|---|---|
| Assistant Professor | 639 (81.29) | 353 (80.59) | 992 (81.04) |
| Associate Professor | 98 (12.46) | 61 (13.92) | 159 (12.99) |
| Professor | 49 (06.23) | 24 (05.47) | 73 (05.96) |

The Table-1 also depicts that among 786 Male respondents, 639 (81.29%) are Assistant Professors, 98 (12.46%) are Associate Professors and 49 (06.23%) are Professors. Among 438 Female respondents, 353 (80.59%) are Assistant Professors, 61 (13.92%) are Associate Professors and 24 (05.47%) are Professors.

### 5.2. Use of Electronic Information Resources

The use of electronic information resources by the members of the faculty has been summarized in Table-2. The Table-2 depicts that 1157 (94.52%) faculty members opine as 'Yes' towards using electronic information resources and 67 (05.47%) faculty members opine as 'No' towards use electronic information resources. The Table-2 also shows discipline wise use of electronic information resources in detail.

**Table-2:** Use of Electronic Information Resources

| Use of E-Information Resources | Civil Engg. (N=279) | Mech. Engg. (N=242) | Elect. Engg. (N=157) | Comp. Sci. Engg. (N=349) | Biotech. andChem.Engg. (N=87) | Basic Sciences (N=110) | Total (N=1224) |
|---|---|---|---|---|---|---|---|
| Yes | 256 (91.17) | 216 (89.25) | 149 (94.90) | 346 (99.14) | 85 (97.70) | 105 (95.45) | 1157 (94.52) |
| No | 23 (12.13) | 26 (10.74) | 08 (05.09) | 03 (00.85) | 02 (02.29) | 05 (04.54) | 67 (05.47) |
| **$\chi 2$= 33.409, df=5, P=0.00000312** | | | | | | | |
| Note: Figures in parentheses indicate percentage | | | | | | | |

### 5.3.Place of Access to E-Resources

The place of access to e-resources by the member of faculty has been summarized in Table-3. The Table-3 depicts that 889 (72.63%) of faculty members access electronic resources from the 'Library', followed by 506 (41.33%) access from 'Home', 406 (33.16%) access from 'Department', 102 (08.33%) access from other institutional libraries and 74 (06.04%) of faculty members access electronic resources from the 'Classroom/Computer Laboratory.'

**Table-3:** Place of Access to E-Resources

| Place of Access to E-resources | Frequency | Percentage |
|---|---|---|
| Library | 889 | 72.63 |
| Department | 406 | 33.16 |
| Home | 506 | 41.33 |
| Class Room/Computer Lab | 74 | 06.04 |
| Other institutional libraries | 102 | 08.33 |

### 5.4. Extent of Use of Electronic Information Resources

The extent of the use of electronic information resources by the faculty members has been summarized in Table-4. The Table-4 depicts that 419 (34.23%) of faculty members use Full text Databases 'To a little extent', followed by 364 (29.73%) of faculty members 'Not at all' use Indexing and Abstracting Databases, 401 (32.76%) of faculty members use e-journals ' To a great extent', 328 (26.79%) of faculty members use e-books ' To a moderate extent', 461 (37.66%) of faculty members use e-thesis and dissertation 'To a little extent', 464 (37.90%) of faculty members use e-reference resources 'To a great extent', 659 (53.83%) of faculty members use e-newspapers 'To a great extent', 506 (41.33%) of faculty members use Statistical Databases'To a little extent', 403 (32.92%) of faculty members use Multimedia products'To a great extent' and 421 (34.39%) of faculty members use E-Clipping resources 'To al little extent'.

**Table-4:** Extent of Use of Electronic Information Resources

| Electronic Resources | To a great Extent | To a moderate Extent | To a little Extent | Cannot say | Not at all |
|---|---|---|---|---|---|
| Full text Databases | 261 (21.32) | 196 (16.01) | 419 (34.23) | 232 (18.95) | 116 (09.47) |
| Indexing and Abstracting Databases | 194 (15.84) | 263 (21.48) | 207 (16.91) | 196 (16.01) | 364 (29.73) |
| E- journals | 401 (32.76) | 322 (26.30) | 280 (22.87) | 184 (15.03) | 37 (03.02) |
| E- Book | 209 (17.07) | 328 (26.79) | 308 (25.16) | 236 (19.28) | 143 (11.68) |
| E-Thesis and Dissertation | 301 (24.59) | 407 (33.25) | 461 (37.66) | 35 (02.85) | 20 (01.63) |
| E- | 464 | 425 | 302 | 26 | 07 |

| | | | | | |
|---|---|---|---|---|---|
| Reference Database | (37.90) | (34.72) | (24.67) | (02.12) | (00.57) |
| E-Newspapers | 659 (53.83) | 293 (23.93) | 210 (17.15) | 44 (03.59) | 18 (01.47) |
| Statistical Databases | 300 (24.50) | 241 (19.68) | 506 (41.33) | 126 (10.29) | 51 (04.16) |
| Multimedia Products | 403 (32.92) | 327 (26.71) | 273 (22.30) | 185 (15.11) | 36 (02.94) |
| E-Clipping | 293 (23.93) | 367 (29.98) | 421 (34.39) | 74 (06.04) | 69 (05.63) |
| **$\chi 2$= 2603.642, df=36, P=0.00** | | | | | |
| Figures in parentheses indicate percentage | | | | | |

### 5.5. Extent of Use of Electronic Information Services

The extent of the use of electronic information services by faculty members has been summarized in Table-5. The Table-5 depicts that 403 (32.92%) faculty members access to OPAC 'To a moderate extent', followed by 394 (32.18%) faculty members use Access to Internet in the Library' To a little extent', 461 (37.66%) faculty members use Current Awareness Services 'To a great extent', 586 (47.87%) faculty members use Selective Dissemination of information 'To a great extent', 462 (37.74%) faculty members use Electronic References Services'To a little extent', 569 (46.48) faculty members 'Not at all' Literature Search Service and 406 (33.16%) faculty members use online E-Document Delivery Services 'To a little extent'.

**Table-5:** Extent of Use of Electronic Information Services

| Services | To a great extent | To a moderate extent | To a little extent | Cannot say | Not at all |
|---|---|---|---|---|---|
| Access to OPAC | 389 (31.78) | 403 (32.92) | 295 (24.10) | 14 (01.14) | 23 (01.87) |
| Access to Internet in the Library | 146 (11.92) | 239 (19.52) | 394 (32.18) | 84 (06.86) | 361 (29.49) |
| Current Awareness Service (CAS) | 461 (37.66) | 388 (31.69) | 299 (24.42) | 52 (04.24) | 24 (01.96) |
| Selective Dissemination of information (SDI) | 586 (47.87) | 461 (37.66) | 145 (11.84) | 23 (01.87) | 09 (00.73) |
| Electronic References Services | 397 (32.43) | 208 (16.99) | 462 (37.74) | 93 (07.59) | 64 (05.22) |
| Literature Search Service | 208 (16.99) | 199 (16.25) | 141 (11.51) | 107 (08.74) | 569 (46.48) |
| E-Document Delivery Service | 246 (20.09) | 235 (19.19) | 406 (33.16) | 224 (18.30) | 113 (09.23) |
| Figures in parentheses indicate percentage | | | | | |

### 5.6. Learn the Skill of Using Electronic Information Resources and Services

The information gathered towards how the faculty members learn the skill of making use of electronic information resources and services has been summarized in Table-6. The Table-6 depicts that 900 (73.52%) of the member of faculty learn the skill of using electronic information resources and services by 'Self Study by trial and error methods', followed by 899 (73.44%) 'Browsing through Internet', 610 (49.83%) 'Taking the Assistance from Library Staff,'545 (44.52%) 'Guidance from friends/ colleagues' and 479 (39.13%) of a member of faculty learn the skill by 'Attending Library Training Programme'. The Table-6 also highlights in details discipline wise responses.

**Table-6:**Learn the Skill of Using Electronic Information Resources and Services

| Options | Civil Engg. (N=279) | Mech. Engg. (N=242) | Elect. Engg. (N=157) | Comp. Sci. Engg. (N=349) | Biotech. and Chem.Engg. (N=87) | Basic Sciences (N=110) | Total (N=1224) |
|---|---|---|---|---|---|---|---|
| Self-study by trial and error methods | 201 (72.04) | 166 (68.59) | 84 (53.50) | 306 (87.67) | 64 (73.56) | 79 (71.81) | 900 (73.52) |
| Taking the Assistance from Library Staff | 146 (52.32) | 187 (77.27) | 76 (48.40) | 79 (22.63) | 58 (66.66) | 64 (58.18) | 610 (49.83) |
| Attending library training programme | 133 (47.67) | 118 (48.76) | 72 (45.85) | 56 (16.04) | 47 (54.02) | 53 (48.18) | 479 (39.13) |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Guidance from friends / colleagues | 158 (56.63) | 146 (60.33) | 56 (35.66) | 62 (17.76) | 51 (58.62) | 72 (65.45) | 545 (44.52) |
| Browsing through internet | 203 (72.75) | 181 (71.79) | 107 (06.81) | 281 (80.51) | 46 (52.87) | 81 (73.63) | 899 (73.44) |
| Note: Figures in parentheses indicate percentage and because of multiple-choice options, the percentage is exceeded to more than 100%. | | | | | | | |

**5.7. Purpose of Use of Electronic Journals**

The purpose of the use of electronic journals by the faculty members has been summarized in Table-7. The Table-7 depicts that 1162 (94.93%) of faculty members use electronic journals to prepare for teaching, 994 (81.20%) of faculty members use electronic journals to keep up-to-date latest developments, 978 (79.90%) of faculty members use electronic journals for formation of syllabus, 973 (79.49%) of faculty members use electronic journals to write articles and 955 (78.02%) of faculty members use electronic journals for the research study. The Table-7 also shows discipline wise purpose of the use of electronic journals.

**Table-7:** Purpose of Use of Electronic Journals

| **Purpose** | **Civil Engg. (N=279)** | **Mech. Engg. (N=242)** | **Elect. Engg. (N=157)** | **Comp. Sci. Engg. (N=349)** | **Biotech. andChem.Engg. (N=87)** | **Basic Sciences (N=110)** | **Total (N=1224)** |
|---|---|---|---|---|---|---|---|
| Reference Purpose | 231 (82.79) | 212 (87.60) | 76 (48.40) | 302 (86.53) | 68 (78.16) | 89 (80.90) | 978 (79.90) |
| To prepare for teaching | 246 (88.17) | 207 (85.53) | 148 (94.26) | 343 (98.28) | 84 (96.55) | 104 (94.54) | 1162 (94.93) |
| To write article | 186 (66.66) | 201 (83.05) | 137 (87.26) | 294 (84.24) | 72 (82.75) | 83 (75.45) | 973 (79.49) |
| To keep up-to-date latest developments | 174 (62.36) | 239 (98.76) | 141 (89.80) | 269 (77.07) | 82 (94.25) | 89 (80.90) | 994 (81.20) |
| For Research study | 203 (72.75) | 198 (81.81) | 89 (56.68) | 292 (83.66) | 77 (88.50) | 96 (87.27) | 955 (78.02) |
| **$\chi 2$=54.68, df=20, P=0.00004583** | | | | | | | |
| Note: Figures in parentheses indicate percentage and because of multiple-choice options the percentage is exceeded to more than 100%. | | | | | | | |

**5.8. Awareness of VTU-Consortium**

The awareness about VTU-Consortium by the members of the faculty has been summarized in Table-8. The Table-8 depicts that 1163 (95.01%) faculty members opine as 'Yes' they are aware of VTU-Consortium and 71 (05.80%) opine as 'No' towards awareness of VTU-Consortium. It is also clear from the Table-8 that large numbers of faculty members of various engineering colleges knowthe VTU consortium. The Table-8 also shows discipline wise awareness of the VTU Consortium.

**Table-8:** Awareness of VTU-Consortium

| **Awareness of VTU-Consortium** | **Civil Engg. (N=279)** | **Mech. Engg. (N=242)** | **Elect. Engg. (N=157)** | **Comp. Sci. Engg. (N=349)** | **Biotech. and Chem.Engg.** | **Basic Sciences (N=110)** | **Total (N=1224)** |
|---|---|---|---|---|---|---|---|

| | | | | | **(N=87)** | | |
|---|---|---|---|---|---|---|---|
| **Yes** | 271 (97.13) | 216 (89.25) | 148 (94.26) | 342 (97.99) | 82 (94.25) | 104 (94.54) | 1163 (95.01) |
| **No** | 08 (02.86) | 26 (10.74) | 09 (05.73) | 07 (02.00) | 05 (05.74) | 06 (05.45) | 71 (05.80) |
| **$\chi 2$=26.476, df=5, P=0.00007213** | | | | | | | |
| Note: Figures in parentheses indicate percentage | | | | | | | |

### 5.9 Frequency of Use of VTU-Consortium for Accessing E-Resources

The frequency of use of VTU-Consortium for accessing e-resources by the members of faculty has been summarized in Table-9. The Table-9 shows that 336 (27.45%) of members of faculty use Elsevier 'Occasionally', followed by 321 (26.22%) 'Frequently', 246 (20.09%) 'Most Frequently', 219 (17.89%) 'Less Frequently' and 41 (03.34%) 'Not at all'.About 401 (32.76%) of members of faculty use Institution of Civil Engineers 'Occasionally', followed by 256 (20.91%) 'Less frequently', 234 (19.11%) 'Frequently', 198 (16.17%) 'Most frequently' and 74 (06.04%) 'Not at all'.About 392 (32.02%) of members of faculty use ACM Digital Library 'Less frequently', 296 (24.18%) 'Occasionally', 207 (16.91%) 'Most frequently', 153 (12.50%) 'Not at all' and 115 (09.39%) 'Frequently'.

About 341 (27.85%) of members of faculty use Springer Nature 'Most frequently', followed by 302 (24.67%) 'Less frequently', 265 (21.65%) 'Occasionally', 209 (17.07%) 'Frequently' and 46 (03.75%) 'Not at all'.About 386 (31.53%) of members of faculty use Taylor and Francis ' Occasionally', followed by 235 (19.19%) 'Frequently', 224 (18.30%) 'Less frequently', 204 (16.66%) 'Most frequently' and 114 (09.31%) 'Not at all'.About 331 (27.04%) of members of faculty use Knimbus' Most frequently', followed by 327 (26.71%) 'Occasionally', 227 (18.54%) 'Frequently', 196 (16.01%) 'Less frequently' and 82 (06.69%) 'Not at all'.About 361 (29.49%) of members of faculty use McGraw Hill Education 'Most frequently', followed by 309 (25.24%) 'Frequently', 217 (17.72%) 'Occasionally', 180 (14.70%) 'Less frequently' and 96 (07.84%) 'Not at all'.

About 413 (33.74%) of members of faculty use New Age International 'Occasionally', followed by 310 (25.32%) 'Less frequently', 162 (13.23%) 'Frequently', 142 (11.60%) 'Not at all' and 136 (11.11%) 'Most frequently'.

About 412 (33.66%) of members of faculty use Pakt 'Less frequently', followed by 235 (19.19%) 'Frequently', 221 (18.05%) 'Most frequently', 206 (16.83%) 'Occasionally' and 89 (07.27%) 'Not at all'.

**Table-09:** Frequency of Use of VTU-Consortium for Accessing E-Resources

| Publishers of VTU Consortium | Most Frequently | Frequently | Less frequently | Occasionally | Not at all |
|---|---|---|---|---|---|
| Elsevier | 246 (20.09) | 321 (26.22) | 219 (17.89) | 336 (27.45) | 41 (03.34) |
| Institution of Civil Engineers | 198 (16.17) | 234 (19.11) | 256 (20.91) | 401 (32.76) | 74 (06.04) |
| ACM Digital Library | 207 (16.91) | 115 (09.39) | 392 (32.02) | 296 (24.18) | 153 (12.50) |
| Springer Nature | 341 (27.85) | 209 (17.07) | 302 (24.67) | 265 (21.65) | 46 (03.75) |
| Taylor and Francis | 204 (16.66) | 235 (19.19) | 224 (18.30) | 386 (31.53) | 114 (09.31) |
| Knimbus | 331 (27.04) | 227 (18.54) | 196 (16.01) | 327 (26.71) | 82 (06.69) |
| McGraw Hill Education | 361 (29.49) | 309 (25.24) | 180 (14.70) | 217 (17.72) | 96 (07.84) |

| | | | | | |
|---|---|---|---|---|---|
| New Age International | 136 (11.11) | 162 (13.23) | 310 (25.32) | 413 (33.74) | 142 (11.60) |
| Pakt | 221 (18.05) | 235 (19.19) | 412 (33.66) | 206 (16.83) | 89 (07.27) |
| Note: Figures in parentheses indicate percentage | | | | | |

**5.10. Benefits of Use of E-Resources**

The benefits of the use of e-resources by the members of the faculty has been summarized in Table-10. The Table-10 depicts that 1057 (86.35%) of faculty members opine as 'Easy to Use', followed by 1052 (85.94%) of faculty members opine as 'Access to up to date information', 1029 (84.06%) opine as 'Time Saving', 1014 (82.84%) opine as 'Better source of information', 1102 (90.03%) opine as '24/7 access to information', 956 (78.10%) opine as 'Improvement in the quality of professional work', 923 (75.40%) opine as 'Less expensive', 886 (72.38%) opine as 'Information available in various formats', 854 (69.77%) of faculty members opine as 'Easily portable of e-resources'. The in detail benefits of the use of e-resources by discipline wise can be seen in Table-10.

**Table-10:** Benefits of Use of E-Resources

| **Benefits of Use of E-Resources** | **Civil Engg. (N=279)** | **Mech. Engg. (N=242)** | **Elect. Engg. (N=157)** | **Comp. Sci. Engg. (N=349)** | **Biotech. andChem.Engg. (N=87)** | **Basic Sciences (N=110)** | **Total (N=1224)** |
|---|---|---|---|---|---|---|---|
| Time saving | 218 (78.13) | 206 (85.12) | 122 (77.70) | 306 (87.67) | 78 (89.65) | 99 (90.00) | 1029 (84.06) |
| Access to up to date information | 244 (87.45) | 231 (95.45) | 117 (74.52) | 293 (83.95) | 81 (93.10) | 86 (78.18) | 1052 (85.94) |
| Easy to use | 208 (74.55) | 236 (97.52) | 98 (62.42) | 331 (94.84) | 83 (95.40) | 101 (91.81) | 1057 (86.35) |
| Better source of information | 189 (67.74) | 228 (94.21) | 106 (67.51) | 324 (92.83) | 75 (86.20) | 92 (83.63) | 1014 (82.84) |
| Less expensive | 174 (62.36) | 201 (83.05) | 83 (52.86) | 307 (87.96) | 70 (80.45) | 88 (80.00) | 923 (75.40) |
| Information available in various formats | 192 (68.81) | 183 (75.61) | 72 (45.85) | 284 (81.37) | 76 (87.35) | 79 (71.81) | 886 (72.38) |
| 24/7 access to information | 248 (88.88) | 209 (86.36) | 122 (77.70) | 341 (97.70) | 84 (96.55) | 98 (89.09) | 1102 (90.03) |
| Improvement in the quality of professional works | 191 (68.45) | 188 (77.68) | 97 (61.78) | 306 (87.67) | 73 (83.90) | 101 (91.81) | 956 (78.10) |
| Easily portable of E-resources | 122 (43.72) | 141 (58.26) | 113 (71.97) | 314 (89.97) | 69 (79.31) | 95 (86.36) | 854 (69.77) |
| **$\chi$2=78.668, df=40, P=0.00025277** | | | | | | | |
| Note: Figures in parentheses indicate percentage and because of multiple-choice options the percentage is exceeded to more than 100%. | | | | | | | |

**5.11 Problems Faced While Accessing E-Resources**

The problems faced while accessing e-resources by the faculty members has been summarized in Table-11. The Table-11 depicts that 586 (47.87%) of faculty members face problem due to slow internet connectivity with a mean value of 3.274744 and SD 1.465628, followed by 479 (39.13%) face problem due to too much time consuming with a mean value

of 2.546973 and SD 1.680474, 432 (35.29%) face problem due to unfamiliarity with search methods with mean value 2.537037 and SD 1.642468, 355 (29.00%) face problem due to version problem with mean value 2.67042 and SD 1.697089, 343 (28.02%) face problem due to various types of file format with mean value 2.897959 and SD 1.592098. About 319 (26.06%) of faculty members face power problems with a mean value of 2.949843 and SD 1.513987**.**

**Table-11:** Problems Faced While Accessing E-Resources

| Problems Faced | Civil Engg. (N=279) | Mech. Engg. (N=242) | Elect. Engg. (N=157) | Comp. Sci. Engg. (N=349) | Biotech. andChem.Engg. (N=87) | Basic Sciences (N=110) | Total (N=1224) | Mean | SD |
|---|---|---|---|---|---|---|---|---|---|
| Slow internet connectivity | 86 (30.82) | 126 (52.06) | 61 (38.85) | 208 (59.59) | 41 (47.12) | 64 (58.18) | 586 (47.87) | 3.274744 | 1.465628 |
| Too much time consuming | 192 (68.81) | 98 (40.49) | 46 (29.29) | 59 (16.90) | 38 (43.67) | 46 (41.81) | 479 (39.13) | 2.546973 | 1.680474 |
| Type of files Format | 78 (27.95) | 102 (42.14) | 33 (21.01) | 62 (17.76) | 25 (28.73) | 43 (39.09) | 343 (28.02) | 2.897959 | 1.592098 |
| Unfamiliarity with Search method | 146 (52.32) | 132 (54.54) | 52 (33.12) | 17 (04.87) | 37 (42.52) | 48 (43.63) | 432 (35.29) | 2.537037 | 1.642468 |
| Version problem | 122 (43.72) | 88 (36.36) | 33 (21.01) | 41 (11.74) | 32 (36.78) | 39 (35.45) | 355 (29.00) | 2.670423 | 1.697089 |
| Power problem | 67 (24.01) | 91 (37.60) | 18 (11.46) | 93 (26.64) | 16 (18.39) | 34 (30.90) | 319 (26.06) | 2.949843 | 1.513987 |
| Note: Figures in parentheses indicate percentage and because of multiple choice options the percentage is exceeded to more than 100%. | | | | | | | | | |

### 5.12.Problems Associated with Utilization of ICT Applications

The issues associated with the utilization of ICT applications by faculty members have been summarized in Table-12. The Table-12 depicts that 325 (26.55%) faculty members 'Disagree' with the option that lack of access to computer is the problem faced towards utilization of ICT applications, followed by 498 (40.68%) faculty members 'Strongly Disagree' with the problem due to lack of access to internet, 312 (25.49%) faculty members 'Uncertain' with the problem due to power failure, 339 (27.69%) faculty members 'Uncertain' with the problem due to lack of time, 544 (44.44%) faculty members 'Strongly Disagree' with the problem due to slow internet connection /low bandwidth, 399 (32.59%) faculty members 'Strongly Disagree' with the problem due to inadequate information search skills, 329 (26.87%) faculty members 'Strongly Agree' with the problem due to unfamiliarity with computer hardware and software, 431 (35.21%) faculty members 'Strongly Agree' with the problem due to lack of orientation /training program on computer literacy, 337 (27.53%) faculty members 'Strongly Agree' with the problem due to absence of well-equipped classroom /laboratories with ICT infrastructure.

**Table-12:** Problems Associated with Utilization of ICT Applications

| Nature of Problems | Strongly Agree | Agree | Uncertain | Disagree | Strongly Disagree |
|---|---|---|---|---|---|
| Lack of access to computer | 43 (03.51) | 321 (26.22) | 301 (24.59) | 325 (26.55) | 234 (19.11) |
| Lack of access to Internet | 69 (05.63) | 73 (05.96) | 285 (23.28) | 299 (24.42) | 498 (40.68) |
| Power failure | 106 | 297 | 312 | 265 | 244 |

| | | | | | |
|---|---|---|---|---|---|
| | (08.66) | (24.26) | (25.49) | (21.65) | (19.93) |
| Lack of Time | 220 (17.97) | 306 (25.00) | 339 (27.69) | 211 (17.23) | 148 (12.09) |
| Slow internet connection /low bandwidth | 62 (05.06) | 71 (05.80) | 281 (22.95) | 266 (21.73) | 544 (44.44) |
| Inadequate information search skills | 224 (18.30) | 162 (13.23) | 144 (11.76) | 295 (24.10) | 399 (32.59) |
| Unfamiliarity with computer hardware and software and its use | 329 (26.87) | 204 (16.66) | 103 (08.41) | 296 (24.18) | 292 (23.85) |
| The lack of orientation /training program on computer literacy | 431 (35.21) | 298 (24.34) | 135 (11.02) | 164 (13.39) | 196 (16.01) |
| Absence of well-equipped classroom /laboratories with ICT infrastructure | 337 (27.53) | 241 (19.68) | 207 (16.91) | 209 (17.07) | 230 (18.79) |
| Note: Figures in parentheses indicate percentage | | | | | |

## 6. Suggestions

Based on the above results, the following suggestions to enhance the use of ICT based resources and services by the faculty members of engineering colleges in the Mysore region are:

- The libraries should organize training, seminars and workshops for the users at regular intervalsto keep users in tune with the latest ICT-enabled technologies.
- The faculty membersshould further improve their information searching skills to make better use of mostly available web information resources.
- The internet speed should be increased to save user valuable time and speed up the information search and retrieval process.
- A more informative, user-friendly, and well-organized library web page/ website should be developed to efficiently access electronic information resources and services.
- The faculty members should be trained in using various ICT enabled tools and software related to it.
- User feedback must be taken to understand there problems and check if the resources and services provided are satisfactory.
- The Library budget to be increased for procurement of the latest ICT tools and software for providing effective e-resources and services to the users.
- The library can set up Off-Campus Access servers like EZproxy in the library and provide e-resources and services to its users' doorsteps.

## 7. Conclusion

The advancement in Information and Communication Technology has created a new infrastructure for engineering college libraries and changed the way they function and provide services. The large amount of ICT enables resources and services made available through the internet have becomean inseparable part of today's educational system. With the tremendous development in Internet and Information Communication Technology, large amounts of educational resources are being produced, distributed and accessed in the electronic format. The libraries should organize training, seminars and workshops for the users at regular intervalsto keep users in tune with the latest ICT-enabled technologies and services. The libraries can provide an Off-Campus Access facility of e-resources and services to their users' doorsteps.The ICT allows libraries to provide value-added information services and access various digital-based information resources to their users.

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