Chapter 6

6.1 On Respondents Criteria:

1. The survey included 88 colleges of Bangalore region, which accounted for 44% of the total (200) number of colleges under VTU and the response rate for the survey were quite satisfactory with 86.06% of questionnaires, was received back by the researcher.

2. The respondents in majority are middle level teaching faculty, comprising Associate Professors with 15.50% and Assistant Professors 57.50% and can be reckoned as active users of information, since Professor (08%) category have statutory administrative functions in addition to teaching. The others include primarily, research staff that is in small number too.

3. The results of teaching responsibilities to undergraduate and postgraduate courses also show an equitable distribution as more number of teachers 68% are engaged in undergraduate teaching as the number of undergraduate courses and students’ strength is also more and the teaching work load will also be more. The postgraduate courses would be small number and the number is equally less, hence only 07% are engaged in postgraduate teaching. The duration of undergraduate and postgraduate courses are also vary at the ratio of 2:1 (8 Semesters and 4 Semesters) respectively. The research supervision is normally at the level of Associate Professors and above and it is mandatory too, hence 23.50% are engaged in Research supervision.

4. The number of years of experience shows comparative ratios with the number of Professors, Associate Professors, and Assistant Professors. The experience range of 0 to 10 years comprises 72% of teaching staff strength that is in consonance with the number of Associate and Assistant Professors together comprise 73% where there are teachers
with higher range of experience with 11 to 16 years and above has 28% and the teaching staff would comprise Professors and others

The findings presented as above would be considered as quite satisfactory and might follow a normal distribution of the responses- with regard to strength of teachers in different categories, courses they teach and the number of years of experience possessed by them.

6.2 Tests of Hypotheses on Library and Resources Use:

5. The frequency of library visits show quite satisfactory results and the frequencies, daily with 31% and when need arises 23% are important. “When the need arises” may be even a daily or more number of times visits per day. The other frequencies of visits weekly and fortnightly together show 42%. The number of respondents visiting as monthly is very small with only 08% of respondents.

6. The findings on the time spent are; in the time span spent up to 2 hours is good with 66% and interestingly the time spent of more than 4 hours is also quite satisfactory with 13% of the teachers, and the span between 2-4 hours is only 21%.

7. The methods used by teachers to keep abreast of developments in their fields of interest comprise both formal and informal channels as they show 74% and 63% respectively, meaning “Referring to Journals” and “Attending Conferences, Seminars” etc. It is also observed that good response is found with 48% of teachers who are also engaged in Personal communication and a small number of them around 18% find “Electronic discussion” as the last preference to keep them updated.
8. In this context the study has formulated Hypotheses as;

i. There is a significant difference between different designation of teachers and
the methods by which they keep abreast of current developments in their fields.

ii. There is a significant difference between various courses taught by teachers
and the methods by which they keep abreast of current developments in their
fields.

iii. There is a significant difference between the experience of teachers and the
methods by which they keep abreast of current developments in their fields.

iv. There is a significant difference between the frequency of visits to library by
teachers and the methods by which they keep abreast of current developments in
their fields.

v. There is a significant difference between time spent on use of E-Resources in a
week by teachers and the methods by which they keep abreast of current developments in
their fields.

Each Hypothesis are taken at a time to test and the findings of the tests are presented
below:

**Hypothesis 1:**

- The tests of hypothesis is to show that there is a significant difference between
designations of teachers and the methods by which they keep abreast of current
developments in their fields were undertaken. The calculations are presented
under Table 5.81.
The null hypothesis, there is no significant difference between designations of teachers and referring to abstracts in journals holds true because it is not significant at 0.008 and with degree of freedom of 3.

The null hypothesis states that, there is no significant difference between different designation of teachers and their personal communication with colleagues to keep abreast of current developments in their fields did not be proved as it is significant at 0.206 with the degree of freedom 3.

It is found that in the null hypothesis, there is no significant difference between different designations of teachers and attending conferences / seminars and workshops to keep abreast of current developments in their fields has been proved true with the degree of freedom 3.

The null hypothesis that, there is no significant difference between different designations of teachers and subscribing to electronic discussion group to keep abreast of current developments in their fields did not hold true with degree of freedom 3.

The null hypothesis, there is no significant difference between different designations of teachers and use of CAS to keep abreast of current developments in their fields didn’t hold true with degree of freedom 3.

Hypothesis 2:

The tests of hypothesis to show that there is a significant difference between various courses taught by teachers and the methods by which they keep abreast of current developments in their fields were undertaken. The calculations are presented under Table 5.82.
• The null hypothesis that there is no significant difference between various courses taught by teachers and their personal communication with colleagues to keep abreast of current developments in their fields is shown as not significant with degree of freedom 2, and the hypothesis is not true.

• The null hypothesis that there is a significant difference between various courses taught by teachers and attending conferences/seminars/workshops to keep abreast of current developments in their fields is not true with the degree of freedom 2.

• The null hypothesis that there is a significant difference between various courses taught by teachers and subscribing to electronic discussion group to keep abreast of current developments in their fields is not true with the degree of freedom 2.

• The null hypothesis that there is a significant difference between various courses taught by teachers and use of current awareness service by teachers to keep abreast of current developments in their fields is not significant hence the null hypothesis does not hold true.

**Hypothesis 3:**

- The tests of hypothesis that, there is a significant difference between the experience of teachers and the methods by which they keep abreast of current developments in their fields were undertaken. The calculations are presented under Table 5.83.

- The null hypothesis that there is no significant difference between the years of experience of teachers and their referring to journals to keep abreast of current developments in their fields was not true at a degree of freedom 3.
- The null hypothesis that there is no significant difference between the years of experience of teachers and referring to abstracts in journals to keep abreast of current developments in their fields was held true with the degree of freedom 3.

- The null hypothesis that there is no significant difference between the years of experience of teachers and their personal communication with colleagues to keep abreast of current developments in their fields was not true at degree of freedom 3.

- The Null Hypothesis that there is no significant difference between the years of experience of teachers and attending conferences/seminars/workshops to keep abreast of current developments in their fields were also not true with degree of freedom 3.

- The Null Hypothesis that there is no significant difference between the years of experience of teachers and subscribing to electronic discussion group to keep abreast of current developments in their fields did holds true at degree of freedom 3.

- The null hypothesis that there is no significant difference between the years of experience of teachers and use of current awareness service to keep abreast of current developments in their fields was also not proved true with degree of freedom 3.

**Hypothesis 4:**

- The tests on the hypothesis that there is a significant difference between the frequency of visits to library by teachers and the methods by which they keep abreast of current developments in their fields were conducted. The calculations are presented under Table 5.84
• The null hypothesis that there is no significant difference between frequency of visit to library by users and their referring to journals to keep abreast of current developments in their fields was held true with degree of freedom 4.

• The null hypothesis that there is no significant difference between frequency of visit to library by teachers and referring to abstracts in journals to keep abreast of current developments in their fields and the null hypothesis does not hold true with the degree of freedom 4.

• The null hypothesis that there is no significant difference between frequency of visit to library by teachers and their personal communication with colleagues to keep abreast of current developments in their fields is not true and degree of freedom being 4.

• The null hypothesis that there is no significant difference between frequency of visit to library by teachers and attending conferences/seminars workshops to keep abreast of current developments in their fields did not hold true with degree of freedom 4.

• The null hypothesis that there is no significant difference between frequency of visit to library by teachers and subscribing to electronic discussion group to keep abreast of current developments in their fields is proved true with degree of freedom 4.

• The null hypothesis that there is no significant difference between frequency of visit to library by teachers and use of current awareness service to keep abreast of current developments in their fields and it holds true with degree of freedom 4.
Hypothesis 5:

- The tests on the hypothesis that there is a significant difference between time spent on use of E-Resources in a week by teachers and methods by which they keep abreast of current developments in their fields were conducted. The calculations are presented under Table 5.85
- The null hypothesis that there is no significant difference between time spent on use of E-Resources in a week by teachers and their referring to journals to keep abreast of current developments in their fields was held true with degree of freedom 4.
- The null hypothesis that there is no significant difference between time spent on use of E-Resources in a week by teachers and referring to abstracts in journals to keep abreast of current developments in their fields is found true, the degree of freedom 4.
- The null hypothesis that there is no significant difference between time spent on use of E-Resources in a week by teachers and their personal communication with colleagues to keep abreast of current developments in their fields did hold true with degree of freedom 4.
- The null hypothesis that there is no significant difference between time spent on use of E-Resources in a week by teachers and attending conferences/seminars/workshops to keep abreast of current developments in their fields was proved true with degree of freedom 4.
- The null hypothesis that there is no significant difference between time spent on use of E-Resources in a week by teachers and subscribing to electronic discussion
group to keep abreast of current developments in their fields holds true and degree of freedom being 4.

- The Null Hypothesis that there is no significant difference between time spent on use of E-Resources in a week by teachers and use of current awareness service to keep abreast of current developments in their fields is not significant with degree of freedom 4 and the hypothesis holds true.

### 6.3 Other Findings

1. In teaching and research, the Books, Internet Resources and discussion with colleagues are found very important in their order of priority. The scholarly journals are found to be almost same as very important and important and the personal communication important in teaching research.

2. The five E-Resources portals; IEEE, Elsevier, Springer, ASME and McGraw Hill are subscribed by most college libraries in range of 84-52 colleges, amounting 95 to 60% of the libraries under the study.

3. Among the E-Resources, E-journals rank first among the very useful, others very useful items are, e-Books, e-learning facility and electronic thesis, find. Among the not at all useful are the Databases and Digital Archives. It is also found that about Web 2.0, RSS, Virtual Desks, the users have expressed their uncertain utility.

4. Among the Search interfaces adopted by the respondents, Search engines are the first priority followed by library websites and the last being all useful sites. This finding seems to be quite obvious choice of search interface.

5. Among the places of use of E-Resources the users prefer to use their library, and then department and thirdly the home. The results are quite obvious. However the
priorities like R and D centre and Browsing Centers also find some consideration in this context.

6. It is quite satisfactory that nearly 88% of respondents are aware that their college library subscribes for E-Resources portal. Remaining may not be visiting the library.

7. The most frequent use of resources is daily and for all the purposes and it is also quite evident that for preparing for lectures and consultancy is higher and other purposes have been represented well than the other higher frequencies. Only for the preparation of Research Proposal, it is higher with annual frequency.

8. The use and purpose of the institutional repositories is also quite encouraging with, priorities of use show, e-journals as the first then the purpose for use would be for the preparation of syllabus and then for previous question papers.

9. The methods used for access to E-Resources are on priority are Guidance from friends and colleagues, library staff come next and then attending the workshops and training programmes.

10. In order to enhance the retrieval results, the user have also used alternation search methods, like use of alternate keys which finds the priority with 70% responses and use of different keywords with 63% response find the next priority. So the users apply different access keys and different key words which are the different alternate methods used to get satisfactory results and accessing E-Resources.

11. The respondents feel that anytime/anywhere access, universal access, space/time save, speed of communications, easy to handle, high storage, multiple access/use and reduced costs are the advantages in using electronic information resources, on priorities. Anytime/anywhere access is considered to be the highest advantage as expressed by the respondents. Next in the order of more advantageous is universal
access and seems to be almost identical. The study has identified as many as 13 advantages and findings reveal that the respondents have positively endorsed most of them on priorities.

12. Conversely the disadvantages of the E-Resources are also measured. The disadvantages identified are such as; copyright issues as highest (310) and incompatibility between format (237) slow download (234) and discomfort to read the e-copy are other disadvantages. It may be noted here that to overcome the last demerit, the users prefer the hard copy of the e-version than reading the e-copy.

13. The respondents amounting to 663 users out of 866 have stated that E-Resources are very useful. The usefulness print resources have been nearly that 120 respondents out of 866 are uncertain about the usefulness of print resources.

14. It is interesting to note that, even though the users prefer the E-Resources more useful but would like to print version the same as preference. Only 10% of the want the electronic version, in case of both print and electronic it is preferred by 63% respondents nearly two more than print and electronic versions which show 27% and 10% respectively.

15. The problems faced by users in the use of E-Resources are quite normal; as expected the lack of support from the library staff is found to be least with only(25%) whereas the users have expressed their problems are in majority is due to lack of computers (40%). Lack of help guides and lack of information on E-Resources are the other problems with 38% and 35% responses.
6.4 ICT Infrastructure Facilities:

16. The respondents’ opinions on ICT facilities show some good results. The availability of computers shows 77% libraries have adequate computer facilities. Other facilities are; Internet, Accessories like scanners, printers and photocopiers are all have adequate facilities as shown in table 5.9.17.

17. The number of e-book readers in the colleges are quite inadequate and as many as 99% of libraries have no e-book readers.

6.5 Opinion on E-Resources:

18. The opinion of the respondents on adequacy and inadequacy of E-Resources shows a satisfactory result, with 15% show more than adequate, and 61% show as adequate. Only a short number show inadequate and this may be due to non-user community.

6.6 User Training Programme:

19. The provision and non-provision of user training programme shows an equal distribution. So it is necessary that the libraries should provide 100% training to the users to make good use of E-Resources.

20. As complement to this the support from Library staff was found to be quite immediate and cooperation from friendly manners is also very encouraging. All these factors are also in good response, therefore the user responses to use the E-Resources are encouraging, and it can be said from the analysis.
6.7 User Information Seeking Behaviour:

21. As many as 10 user information seeking behavior have been recognized in this study. It is quite interesting to know that the behaviours are quite equitably distributed and has a balancing response as shown in Table 5.9.22. The highest being the Reading Articles/Books is the highest with 78% which covers the formal resources and the remaining are the informal sources such as Conversing with experts (74%), conversing with colleagues (73%) and attending the Conferences / Seminars is another informal channel with 72% responses are shown. The others in this category are e-mail alerts, discussion groups with 55% and 34%. The remaining are the formal courses which are common information seeking behaviours of the users are identified.

6.8 Factor Analysis

22. It is found desirable to use the factor analysis on information seeking behaviour in e-environment. The findings of the factor analysis are presented here.

23. In this analysis four elements of information seeking behaviour in electronic environment were taken up that helped to identify those elements of information seeking behaviour in electronic environment. These elements are found to be appropriate, relevant and useful for implementation in libraries of colleges under study in particular. It is also found that factor analysis is a good way of identifying latent or underlying factors from an array of seemingly important variables and uses a set of techniques to bring correlation between variables and factors.

The result of factor analyzes which are useful for implementation in libraries in engineering colleges in Karnataka is presented in the tables in chapter 5.
6.9 **Kaiser-Meyer-Olkin Tests for Sampling Adequacy:**

The sample taken for the study was tested for its adequacy to meet the objective of the study. Kaiser-Meyer-Olkin (KMO) and Bartlett test was conducted to check the adequacy of the sample. The KMO test for the overall sample shows that the sampling adequacy test value for the sample is 0.628 which show that the sample size collected are good enough to conduct the analysis.

6.10 **Bartlett's Test of Specificity:**

Bartlett's test of specificity was used to test the null hypothesis that the variables in the population correlation matrix are uncorrelated. The result explains that the strength of the relationship among variables is strong and is appropriate to reduce the dimensionality of the data. These two tests have given us the confidence to proceed with the analysis.

6.11 **Results of Factor Analysis:**

In this analysis two factors as detailed below are computed and resultant conclusions are given.

**Factor 1: Interact with teachers and research scholars to improve their teaching and research**

24. From this analysis of this first factor, in order to improve their knowledge and provide better services in their teaching, personal communication with other learned teachers it is found that engineering college teachers under study can ‘further their teaching and research prospects’ through personal communication, chatting with scholars and discussions with students / colleagues.
Factor 2: Enhancing knowledge through scholarly journals and internet Resources

25. It is found that reading articles from scholarly journals help teachers in research and it is found from the study of Engineering college teachers of the sample that the teachers can ‘enhance their knowledge through scholarly journals and internet resources’.

6.12 KMO and Bartlett Test for E-Resources in R & D Work:

The test was conducted for the study of usefulness of E-Resources in R & D and Teaching work.

6.12.1 Bartlett's Test of Specificity

26. Bartlett's test of specificity resulted that the strength of the relationship among variables is strong and is appropriate to reduce the dimensionality of the data. These two tests have given us the confidence to proceed further.

Results of the Factor Analysis:

Another set of factors were taken for analysis and the results are presented.

Factor 1: Web portals, Virtual Conferences/Help Desks and other open access sources are the most useful electronic resources.

27. For improving their knowledge and providing better services in their day to day teaching it is found that electronic resources like Open access, RSS, Subject Gateways, Virtual conferences/Teleconferences, Virtual Helpdesks Web Blogs Web 2.0 and Web exhibitions found to be useful for their day to day activities in teaching and research,
Factor 2: Enhance knowledge through electronic group/discussion group and library networks/websites

28. It is found in this case that the teachers of engineering colleges under study prefer to enhance their knowledge for teaching activities and research through electronic group/discussion groups, and library networks / websites.

Factor 3: Improve knowledge through e-Journals, e-Books and online reference sources

29. It is also found from this factor analysis that engineering college teachers from this study found preference to visit E-Resources like e-journals and e-Books for teaching and research activities.

Factor 4: Use conventional E-Resources, databases and digital archives

30. The factor 4 above was analysed and found that engineering college teachers Bangalore region prefer to use conventional E-Resources, databases and digital archives for their day to day teaching and research activities.

Results of Factor Analysis:

The four factors in relation to access to information were analysed and the finding are as below.

Factor 1: Access information for professional development in the field of research and teaching activities

The analysis found that engineering college teachers prefer to access information for professional development in their field of research and teaching.

Factor 2: Access information for preparation of lectures and presentations
The engineering college teachers under the study, it is found from the factor analysis that their purpose of access to information is meant for preparation of lectures and presentations.

**Results of factor analysis:**

In this analysis the factor of advantages of E-Resources was made. The results are presented below.

**Factor 1:** Variety of advantages in electronic information resources

The analysis of the factors resulted to find that engineering college teachers in Bangalore Region find that for their day-to-day activities in teaching and research electronic information resources are advantageous.

**Factor 2:** High storage, data integrity and security a major advantage

It is found that engineering college teachers of the study reason considered the high storage and data integrity and security as a major advantage of electronic resources.

**6.13 Summing Up**

The study investigated the Information Seeking Behaviour in an Electronic Environment in Libraries among Teachers and Research Scholars of Engineering Colleges under Visvesvaraya Technological University, Karnataka: A Study”. It was found that respondent used a variety of information sources for teaching and research. It is interesting to note that, although respondents previewed the needs for their purposes as effective in meeting their information needs and prefer to update their knowledge to keep up to datedness. Many studies have shown that in addition to formation information
sources, academics also relied heavily on in formal communication channels to meet their information needs. The library environment is currently undergoing a rapid and dynamic revolution leading to a new generation libraries with an emphasis on E-Resources growing in numbers, varieties, formats and categories and new issues are being faced by the libraries for their collection development so that the demands of users are better fulfilled.

The purposes and frequency of visits are quite compatible with each other and dependency of seeking information for the main function is on Teaching and the results show this quite clearly. The Consultancy may be just to browse and visit the library or in order to consult the library on a particular issue of consultancy and this is quite a common purpose of visit to the library more frequently. The responses are very objective and clear in seeking information are different frequencies. The researcher had applied some of the statistics techniques to measure the effectiveness use of resources and usage pattern in their information seeking habits. It is noted worthy to say that KMO and Bartlett Test, factor analysis have been applied for this study to understand in broader way.

In summary, to keep up to date with the seeking, participants use electronic assistance of browsing of information, mainly because these information activities come with the online that other information activities lack, such as searching electronic databases. Moreover, findings shows that although participants are knowledgeable of different electronic channels available to them, they will consider using them only if they are convinced that these channels will have a direct benefit on their research efforts.