CHAPTER 6
FINDINGS, SUGGESTIONS AND CONCLUSION

6.0 Introduction

The analysis in the foregoing chapter has revealed a number of useful results. The main purpose of the study was to ascertain the awareness, attitude and use of digital resources by the research scholars of the University of Kerala. This chapter is a summing up of the major findings drawn from Chapter 5. The findings are grouped under eight heads (1) survey of digital resources (2) awareness, attitude and accessibility (3) information need of research scholars (4) barriers in using digital resources by the scholars (5) relative use of digital resources Vs disciplines (6) relative use of printed documents and digital resources (7) use pattern of search engines (8) purpose for using digital resources. The findings are fruitful in achieving the objectives listed in Chapter 1. The study was started with the following objectives:

1. to survey the digital resources available in the research departments under the University of Kerala;
2. to examine the awareness, attitude and accessibility of digital resources by research scholars;
3. to find out the information need of research scholars;
4. to study the barriers in using digital resources by the scholars;
5. to examine the relative use of digital resources by research scholars in Science and Technology, Humanities and Social Science disciplines;
6. to examine the relative use of printed documents and digital resources by research scholars;
7. to understand the use pattern of search engines by the research scholars; and

8. to examine the purposes for which research scholars use digital resources and how far those resources help the researchers in their research work.

6.1 Findings

1) Survey of the digital resources

It can be seen that out of the 42 departments, the maximum number of research scholars engaged in research are from the University library (36.36%). The second position goes to Life Sciences (16.45%), the third position goes to Indian Languages (13.13%) and the fourth position goes to Social Sciences (11.69%) in respect of research scholars in various schools.

It was found that majority of the libraries in the field of study have no E-Resources such as CD-ROM Databases and Internet. The availability of E-Resources is comparatively higher in libraries of Science & Technology and Humanities. The libraries of language discipline are found the least equipped with the said E-Resources.

About half of the libraries have an average of five computers provided for browsing internet. The percentage of libraries providing Internet search facility are higher in Science & Technology (78.57%).

It is found that E-journal is available only in the libraries of Science & Technology and humanities. In Science & Technology 28.57 % of libraries have more than one e-journal while 50% of the libraries of humanities have at least one e-journal. E-books are available in 15.38 % and 11.11 % libraries of Social Science and language respectively. The percentages of computerized libraries in Science & Technology and Social Science are 71.43 and 69.23 respectively. Only 33.33% of the libraries in language discipline have computerized library. Maximum number of computers provided to the users for searching library OPAC is in Science
& Technology followed by Social Science. Majority of the libraries of Science & Technology and Social Science have at least one computer for searching OPAC. In Science & Technology 14.29 % libraries have more than two computers for searching library OPAC.

Majority of the libraries in all discipline have varying number of computers between one and five. The availability of printer in different disciplines ranges from (25%) Humanities to (42.86%) in Science & Technology. All libraries under study have UPS. Majority of the libraries have more than one UPS. The availability of the Bar Code Printer is found to be sufficient for the use of libraries which use Bar Code. The digital resources available in the University of Kerala research departments are not adequate to meet the information needs of the researchers.

(2) Awareness, Attitude and Accessibility

Out of the total number of research scholars, 27.13 % are males and 72.87 % are females. This shows that the participation of female are higher than males, in doing research in the University of Kerala. This imbalance in the sex ratio of the research scholars is the output of the social perception of the value of research in the University of Kerala. The age-wise categorization of the research scholars, maximum number of research scholars belongs to the age category of 26-30 (65.22%) while 15.01% of the samples fall under the age category of 20-25. 15.44 % of the samples fall under the age category of 31-35 while 4.33 % of the samples fall under the age category of 36-40. Regarding the academic qualification, 76.47 % are PG holders and 22.70 % are M.Phil. holders.

Out of the total, 90.76% of the research scholars are aware of e-resources and 9.24% are not aware of e-resources. Out of the total sample, 92.78 % of the sample have e-mail id. Out of the total research scholars, 59.45 % of them are using e-mail daily, 2.6 % are using e-mail
once, 18.76 % are using e-mail weekly, 6.49 % are using monthly, 11.11 % are using e-mail as needed, 1.59 % are using e-mail infrequently. Out of the total research scholars, 85.28 % of the sample have personal computers, and 93.06 % of the sample have internet connection.

The gender-wise study shows that female research scholars hear more about digital information from word of mouth from colleagues. Male research scholars hear more about sources of digital information from campus department devoted to instructional technology.

Based on the age-wise categorization, research scholars which belong to age group 26-30 hear about the source of digital information more from word of mouth from colleagues followed by word of mouth from research scholars, professional societies or discussion groups compared to other age group of research scholars. The research scholars which belong to age group 31-35 hear the source of information more from recommendation from campus librarian, campus department devoted to instructional technology compared to other age group of research scholars.

23.52 % of the research scholars of Science & Technology get information about digital resources from word of mouth from colleagues while 3.61 % of the research scholars of Humanities get information about digital resources from word of mouth from colleagues. 21.50 % of the research scholars of Social Science get information about digital resources from word of mouth from colleagues while 12.41 % of the research scholars of Language get information about digital resources from word of mouth from colleagues.

Eighty (80%) of the female research scholars have more opinion about the replacement of printed resources by e-resources to a small extent. It is clear that 100% of the research scholars in the age group 26-30 have the opinion that the printed resources will be replaced by e-resources to a small extent.
It is clear that 83.19% of the PG holders have more opinion about the replacement of printed resources by e-resources. It is clear that research scholars in the Science & technology (39.78%) have higher opinion regarding the use of e-resources. Females are of the view that e-resources highly improves (77.44%) the quality of research. Research scholars in the age group 26-30 are of the view that e-resources highly improves (71.34%) the quality of research. Based on the academic qualifications analysis, PG holders are of the view that e-resources highly improves (82.93) the quality of research. Research scholars in science and technology views that the use of digital resources highly improves (77.44%) the quality of research.

Female research scholars (57.94%) obtain technical infrastructure more than male (42.06%). 100% of male research scholars create own website. 47.17% digitalize resources while 52.86% of the female digitalize resources. 47.22% of the male research scholars learn how to use a learning management system, 52.78% of the females research scholars learn how to use a learning management system. 32.84% of the male research scholars import resources to website while 67.16% of the female research scholars import resources to website. i.e., female research scholars import resources more than male. 32.09% of the male know to find digital resources and 67.91% of the female know to find digital resources i.e., female are more aware to find digital resources. It is clear that female research scholars interpret copyright laws and or securing copyright permission. 10.39% of the male access credibility of digital resources and 89.61% of the female access credibility of digital resources. 33.03% of the male research scholars evaluate the appropriateness of resources for the research goals. 66.97% of the female research scholars evaluate the appropriateness of resources for the research goals. It is clear that female research scholars evaluate the appropriateness of resources for the research goals more than male. Research scholars in the age group of 20-25 are higher in creating own website
(100%). Research scholars in the age group of 26-30 are higher in digitize existing resources(61.43%), learn how to use a learning management system (58.33%), import resource into a course website(80.6%), gather and organize and maintain digital material(56.3%), integrate resources into a learning management system(39.62%), find digital resources(64.18%), training research scholars to find or evaluate digital resources(60.12%), interpret copyright laws(43.75%), assess the credibility of digital resources(77.92%) and evaluate the appropriateness of resources for the research goals(55.2%). 83.33% of research scholars in Social Science create own website compared to others. 44.29% of research scholars in Social Science digitize existing resources. 32.41% of research scholars in Social Science learn how to use a learning management system. 44.78% of the research scholars in Social Science import resources into a course website. 40.74% of the research scholars in Social Science gather, organize and maintain digital materials. 56.6% of the research scholars in Science and technology integrate resources into a learning management system. 38.81% of the research scholars in Social Science find digital resource. 49.71% of the research scholars in Science and Technology training research scholars to find or evaluate digital resources.

The study also examines the accessibility of digital resources by research scholars. The scholars access CD-ROM network, CD-ROM stand alone, CDs of reference books, indexing and abstracting CDs, text journal CDs, etc. Majority (71.76 %) of the females use CD-ROM database through CD-ROM stand alone. Majority (66.47%) and 66.04 of the research scholars in the age group 26-30 use CD CROM network and CD-ROM database through CD-ROM stand alone respectively. Out of the total, 85.88% of the PG holders use CD-ROM network and PG holders 75.16% use CD-ROM network. Based on the discipline -wise study, 41.76% of the research scholars in Social Science discipline, use CD-ROM Network. Based on the gender
study, female research scholars (81.65%) use more text journal CDs compared to the other 2 types of CDs.

(3) **Information need of research scholars**

The information needs of different types of scholars in different disciplines vary widely. This section examines the relative use of digital resources by research scholars in Science and Technology, Humanities and Social Science disciplines.

Female research scholars use electronic information resources more (79.93%) than males for writing research work. The research scholars in the age group 26-30 use electronic resources more for collecting study materials (60.75%). Research scholars having PG (83.99%) used electronic resources more for publishing articles. Majority (40.57%) of the research scholars in science & technology use electronic resources for publishing articles.

(4) **Barriers in using digital resources by the scholars**

Based on the gender-wise analysis, both males (61.17%) and females (58.02%) faces lack of high speed connection as a major barrier in using digital resources. Based on the age – wise study, 63.46% of the research scholars in the age group 20-25 faces too poor quality of materials. 57.96 % of the research scholars in the age group 26-30, 60% in 31-35 and 30% in 36-40 age group faces lack of high speed connection as a major barrier in using digital resources. Based on the academic qualification, both PGs and M.Phil. holders faces lack of high speed connection as a major barrier in using digital resources. Based on the discipline- wise analysis, all the 4 disciplines faces lack of high speed connection as a major barrier in using digital resources. In this study the barriers can be grouped into seven factors namely barriers related to Knowledge, software/hardware, reliability, accessibility, structure of digital resources and speed of the internet connection.
(5) Relative use of digital resources Vs Disciplines

Out of the total population, 93.62% of the males use e-journals more than other types of e-resources used, the least used e-resource is e-only journal (15.96%). 83.17% of the females use e-journals more than other types of e-resources used, the least used e-resource is subject gateways (28.12%). Research scholars in the age group 20-25 used e-journals more than any other type of e-resources (94.23%) while research scholars in the age group 26-30 used e-journals more than any other type of e-resources (82.52%). Research scholars in the age group 31-35 used e-journals and e-articles more than any other type of e-resources (88.79%) while research scholars in the age group 36-40 used e-journals more than any other type of e-resources (100). Majority (86.55%) of the PGs and 83.92% of the M.Phil. holders used e-journals more than any other type of e-resources. It is clear that 92.48% of the research scholars in Science &technology, 86.96% of the research scholars in Humanities and 92.34% of the research scholars in Social Science used e-journals more than other types, but research scholars in Language use e-articles more than other types of e-resources. Female research scholars use pen drive (69.98%), hard disk (86.76%), CD (79.22%), Print out (77.72%) more than male research scholars.

It is noted that the storage devices used by research scholars in the age group 26-30 is higher compared to other age groups. 64.84% of the research scholars in the age group 26-30 used pen drive, 53.31% used hard disk, 62.34% used CD and 62.18% of the research scholars used Print out more than other research scholars of different age categories. Based on the educational qualification, 79.1% of the PG holders used pen drive, 73.17% of PG holders used hard disk, 75.65% of the PG holders used CD, 77.72% of the research scholars used print out more than other research scholars of different age categories. Thirty three point five (33.5%) of
the research scholars in Science and Technology discipline used pen drive, 38.33% of them used hard disk, 42.21% of them used CD, 37.31% of them used print out more than other research scholars of different disciplines.

The frequency of using digital resources by research scholars in different disciplines is different. Majority (66.49%) of the males daily uses digital resources more than females (55.05%). Majority of the M.Phil. holders (61.06%) uses digital resources daily while 59.82% of the PG holders uses digital resources daily. The frequency of using digital resources daily by both the PG and M.Phil. holders are higher. Based on the discipline-wise study, 83.19% of the research scholars in the Science and Technology discipline uses digital resources daily.

(6) Relative use of printed documents and digital resources

Majority of the research scholars in Social Science discipline are of the view that the electronic resources acts only as a supplement to the print medium and the electronic resources especially online sources are not authentic and hence dependence on such resources for study and research is not to be encouraged.

Majority of the research scholars in language discipline are of the view that it is possible to satisfy the information needs without electronic resources.

Majority of the research scholars in Humanities discipline are of the view that electronic resources badly affects the reading habit and the availability of electronic resources open up opportunity to access current as well as comprehensive information which is not accessible earlier.

Majority of the research scholars in Humanities discipline are of the view that electronic resources serve as an alternative when required information is not available in the print medium.

(7) Use pattern of search engines
It can be seen that the majority of the research scholars are found to be using Google as their preferred search engine. Yahoo is found to be the second important search engine. The use of Alta Vista is found to be the least prevalent search engine. A small percentage of the research scholars are using other search engines.

Hundred % (100%) of the males and 97.82 % of the female use Google as search engine. Hundred % (100%) of the research scholars in the age group 20-25, 97.57% of the research scholars in the age group 26-30, 100% of the research scholars in the age group 30-25, 100% of the research scholars in the age group 36-40 use Google as search engines. Ninety eight per cent(98%) of the research scholars with PG and 100% of the research scholars with M.Phil. use Google as search engine. Hundred per cent(100%) of the research scholars in Science and Technology, 95.65% of the research scholars in Humanities, 100% of the research scholars in Social Science and 95.75% of the research scholars in Language use Google as search engine.

(8) Purpose for using digital resources

The research scholars in different disciplines used online journals and databases for various purposes like communication, research, to collect subject information, upgrading general knowledge, for career development.

Males (84.57%) and females(83.17%) used e-resources more for research. 75% of the male research scholars and 77.23% of the female research scholars used online journals for collecting subject knowledge. 76.63% of female research scholars used the e-journals for updating general knowledge while 67.13% of female research scholars used electronic journals for communication.

Seventy one point ninety six per cent (71.96%) of the research scholars in the age group 31-35, used e-resources for communication, 100% of the research scholars in the age group 36-
40 used it for research and to collect subject information, 83.18% of the research scholars used it to upgrade general knowledge, 71.96% of the research scholars used it for career development. M.Phil. research scholars used e-journals more for communication, 85.45% of PGs used it for research, 76.73% of PGs used it to collect subject information, 72% of the PGs used it to upgrade general knowledge, 68.53% of M.Phil. used it to for career development. Research scholars in Social Science used e-resource more for communication, 92.48% of the research scholars in Science and Technology used e-resources more for research, 85.40% and 75.66% and 64.16% of the research scholars in Science and Technology used e-resources more to collect subject information, upgrade general knowledge and for career development respectively.

6.2 Tenability of the hypotheses

On the light of the significant findings drawn out the study, the tenability of the hypotheses formed for the study are tested.

HYPOTHESIS 1

The digital resources available in the Kerala University research departments are not adequate to meet the information needs of the researchers.

As per the findings under the objective (1) it is evident that the digital resources available in the University of Kerala are not adequate to meet the information needs of the researchers. Thus the hypothesis 1 is fully substantiated.

HYPOTHESIS 2

There are significant variations in the information needs of research scholars in various disciplines.

As per the findings under the objectives (2), (3), (5), (6), (7), (8) it is evident that there are variations in the information needs of the research scholars in the various disciplines. Thus the hypothesis 2 is fully substantiated.
HYPOTHESIS 3

There are significant variations in the information use pattern of research scholars in various disciplines.

As per the findings under the objectives (2), (3), (5), (6), (7), (8) it is evident that there are variations in the information use pattern of the research scholars in the various disciplines in the University of Kerala. Thus the hypothesis 3 is fully substantiated.

HYPOTHESIS 4

Research scholars have positive attitude towards digital resources in relation to printed sources.

As per the findings under the objectives (5), (6), (7), (8) it is evident that the research scholars have positive attitude towards digital resources in relation to printed sources. Thus the hypothesis 4 is fully substantiated.

6.3 Areas for further study

The following areas are suggested by the investigator for further studies.

- An investigation into use of digital sources in other universities in Kerala.
- A study on relative use of conventional printed sources and digital sources among research scholars in the Kerala university library system.
- An investigative study on fiscal allocation and expenditure on digital sources in the university libraries in Kerala.
- Information need, use pattern and information use behaviour in the use of digital sources among research scholars in the Science and Technology and Social Science.
- Standards for evaluation and collection development of digital resources.

6.4 Suggestions
The study brought out many fruitful results in respect to awareness, attitude, accessibility and use of digital resources scholars. In the light of the findings of the study a few suggestions are given below which will bring about an overall improvement of current state of libraries so that these libraries could become the knowledge management centres of parent institution.

1. Proper implementation of user education programmes for making aware of the various types of digital resources so that the users may become more aware of the usefulness which in turn increases the frequency of their use.

2. To conduct user studies frequently to understand the short comings and problems faced by the research community. To strengthen the library, outreach programmes maybe organised for achieving equity in information access.

3. Special training programmes need to be arranged for the users to develop information literacy in the use and customization of on-line services in the present day information technology environment.

4. Steps are to be taken for arranging full text access to journals and on-line databases and also providing more number of computer terminals with internet connectivity for accessing electronic resources.

5. Off-campus access to digital resources and procurement of scholarly research papers through national and international document delivery services may also be facilitated in the University library system.

6. E-learning is an effective as traditional instruction-led classroom teaching –learning methods. It is ideal to establish e-learning facilities.

7. An e-resources consortia coalition for university library system in Kerala may be established.
8. As more and more research and educational materials are published in digital form, university library system in Kerala may take initiatives to build and manage digital repositories at institutional levels. The scholarly content in the form of dissertations, articles and other primary sources can be archived by employing open source digital library software packages. Suitable policy decision may ensure its access within or outside the campus.

6.5 Conclusion

Today, the world is moving fast into an era of information society. Every human being is Information - dependent, may be at varying degrees. Along with the rate of production of information the rate of consumption is also on the increase. Even though the www is a rich source of information, retrieval of the required information is not an easy task. In the circumstance, the library profession has the responsibility to design and develop suitable tools and techniques that would facilitate easy retrieval and enhanced utilization of information. It is in this context, that compilation of subject directory become relevant. The development in computer and telecommunication initiated the emergence of the internet, through which various services are offered. The internet is a global mine of information. Due to the emergence of advanced technology and new search tools, a wide variety of information can be accessed at high speed. www can be utilized as a major source of reference and information for accessing e-resources.

Though there are a variety of information sources in e-resources in the Internet no search tools available in the web give a comprehensive coverage. The number of sites retrieved through different search tools during the course of this study was indicative of this. Even though India has a substantial contribution, both traditional and modern, in the field of e-resources, it is not
well represented in the Internet. It is high time that the country has emerged as a provider of
electronic information rather than a mere user.